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In order to make room for the list of awards made to exhibitors of mining machinery, etc., at the Pan-American Exposition, and which is given in this issue, we have been obliged to omit for a second time the list of prices current. The awards made in the Department of Mines and Metallurgy were published in last week's issue.

The Missouri Geological Survey is to be congratulated on its new head, Dr. E. R. Buckley, who has done excellent work as an assistant on the Wisconsin Survey, and may be expected to do still better in the wider field which is now open to him. The Missouri Survey has suffered during the last two or three years from unfortunate appointments for political reasons, and some of its publications have been a source of wonder and regret to geologists. The mine inspectors have done their work faithfully and well, but outside of that there has been a waste of time and labor which is to be regretted. We believe now that there will be a change, and that the work, which may be of so much value to the State, will go forward as it should.

There is every reason to believe that during the next session of Congress important changes will be proposed and probably made in the tariff law. Representative Babcock, of Wisconsin, has announced that he intends to urge the passage of an amendment providing for the free admission of iron and steel. We may reasonably expect that some alterations in the schedules will be effected, but it is to be hoped that no general tariff discussion will be precipitated. If it is, business will be upset for months and the present satisfactory industrial condition will be suspended as long as the discussion lasts. The case is not one that demands heroic treatment. What evil exists may be cured by homeopathic doses without disturbing the whole business of the country.

The use of the dredge in working alluvial gold-bearing deposits in Australia seems to be making rapid progress. Although dredging for gold in New Zealand has been for many years an important factor in the mining industry, its introduction on the Australian Continent is of comparatively recent date, at least so far as extensive operations are concerned. Now, however, we find in the "Australian Mining Standard" returns published by 16 dredging companies in New South Wales and 17 in Victoria; while other companies are preparing to begin operations. From the nature of these returns a majority of the companies seem to be meeting with success. They are, as a rule, working on the lines established by New Zealand practice, and with machinery patterned after New Zealand types.

The Russian iron industry has been materially affected by the crisis through which the Empire has been passing. To some extent the works have been supported by large Government orders for railroad and other material; but there has been a great falling off in other orders and in the earnings of many of the large iron and steel works. While there has been little or no falling off in production, there has been in some cases serious embarrassment and a general reduction of profits. This is especially the case in the Oural District, where many of the iron masters limit their production to pig iron, selling this to foundries and steel works. Concerns of this class are finding increasing difficulty in disposing of their iron, and the outlook for the future is uncertain. A better organization of the industry is urged, but it seems difficult to bring it about.

The Calumet & Hecla Mining Company does not follow the example of the Amalgamated Copper Company in reducing payments to stockholders, but puts its November dividend at $15 per share, the same amount as for the preceding quarter. While the company does not issue any statement, it is generally assumed that production this year is less than it was last year, from causes that are generally understood. The stopping of operations on the Osceola amygdaloid is an unfavorable indication, which is not fully understood. On the other hand, it is believed that the company has started a policy of retrenchment in expenses, which may be of great advantage to it, and for which there was certainly an opportunity. This is, however, one of the times at which, it seems to us, the managers would find it advantageous to abandon their policy of secrecy and to tell their stockholders frankly what they are doing. There is no doubt that the market value of their stock suffers much more from rumor than it would from knowledge of the truth.

The French coal miners have this week voted on the question of ordering a general strike. The majority of the votes cast was in favor of the strike; but as only about one-third of the miners in the various

unions voted, there seems to be still some doubt about it. Possibly another vote may be ordered. The demands of the miners are for an eight-hour day, a fixed minimum, below which wages are not to be reduced, and the right to a State pension of 2 francs daily after 25 years of work. Above the minimum price wages may be regulated by the selling price of coal.

The chief cause of hesitation as to the strike seems to be the fear of large imports of coal. Efforts were made to secure the co-operation of the English miners, but they failed. The possibility of large supplies of coal from the United States is, however, the great obstacle to success in the eyes of the managers of the miners' unions. In their published statements they complain that "the American miners care little for what happens in Europe," and cannot be induced to restrict their output in order to aid a strike in France. In this belief they are quite correct.

The copper markets, both in New York and London, have been the subjects of all sorts of rumors, most of which are evidently without foundation. The old story of a sharp reduction in the prices of electrolytic copper has been freely circulated, but there is no reason to believe that the Amalgamated Company and the United Metals Selling Company have any intentions of departing from the policy they have thus far followed. The reports circulated here have been clearly started in the interest of speculators in the copper stocks, and have had some immediate effect on their quotations, but very small permanent results.

In the same way the recent depression of standard copper in London, from which the market is now recovering, had an intimate relation to the speculation in Rio Tintos, which has been going on. In this connection we must again note that the price of standard copper is no longer the barometer of the market, as it formerly was. During the depression and the present recovery it may be noted that the prices of refined copper showed only very slight fluctuations; and it is at these prices that consumers now practically make their purchases.

The production of copper for the present year showed very little change from that of 1900, according to the reports of Mr. John Stanton, who acts as statistician for the associated companies. The total reported in the nine months up to the end of September this year was 199,626 long tons, while for the corresponding period in 1900 it was 200,142 tons; the decrease being only 516 tons, or a little less than 0.3 per cent. The change was made up by a decrease of 816 tons in the copper from the "reporting mines"—which include all the principal mines—and an increase of 300 tons from "outside sources"—the smaller mines, smelters, etc.

With practically the same production there was a great difference in the exports from the United States. The total copper exported this year up to the end of September was 68,110 tons, while last year it was 126,151 tons, the decrease being 58,041 tons, or 46 per cent. In the nine months this year we exported 34 per cent. of our production and retained in the country 131,516 tons; while last year we exported 63 per cent. of the output, retaining 73,991 tons. The figures for consumption here are not attainable, though there has probably been a large increase, as all the manufacturers consuming copper have been very active.

As we have heretofore noted, European consumers of the metal have generally bought this year only as they were obliged to by their necessities, and are now almost without stocks. There are indications that exports for the remaining months of the year will be on an increased scale. The European production has been slightly less this year than in 1900, while the supplies from countries other than the United States have not increased.

FATAL MINE ACCIDENTS.

An interesting statement in regard to the number of fatal accidents in and about the mines of Great Britain is presented in the report of Dr. C. Le Neve Foster, on the labor employed in mines and quarries for 1900. It shows by graphic diagrams what has been accomplished during the last fifty years toward securing the safety of mine employees. In the five years from 1851 to 1855 inclusive the average number of lives lost per thousand employees underground was 5.2 per year. By quinquennial periods this rate has with one exception steadily decreased, until in the last five years the death rate was 1.5 to each thousand employed. Considering all employees above and below ground the average number of deaths by accident per thousand has decreased from 4.4 to 1.4. In the same way the number of lives lost according to the tonnage produced is shown to have fallen from 19.3 per million tons in 1851 to 4.25 in 1900. The curves illustrating these interesting facts are presented in another part of this issue.

Another curve, which is not reproduced in this issue, shows that in 1851, when the number of employees was 200,000, the total number of deaths by accident was not quite 1,000, while in 1900, when the employees numbered 820,000, the total number of accidental deaths was 1,050, indicating that while the number of workers in 1900 was more than four times those employed in 1851 the fatalities were about the same.

It is unfortunate that we have no way of comparing these statistics with similar ones for the United States. What information of this nature we have for this country is limited to some of the coal-mining States, in which inspection laws are in force, and whose inspectors' reports include the statistics of mine accidents. A compilation of these statistics was made by Mr. Frederick L. Hoffman, and published in the "Engineering and Mining Journal" of August 15th. Mr. Hoffman's statement included 15 States, and Nova Scotia and British Columbia, and showed that the death rate in the coal mines of these States and Provinces has not indicated any such decreasing tendency. In fact, the rates in 1899 and 1900 were the highest since 1891, averaging 2.98 per thousand in 1899 and 3.32 in 1900. The rate in 1900 was the highest in ten years, due to the disaster at the Winter Quarters mine, Utah, in May of that year. The lowest rate in ten years was shown in 1897, when the average was 2.31 per thousand.

While it is true that these figures appear to compare unfavorable with the British report, it must be remembered that they refer to coal mines only. It is apparent, however, that Great Britain is ahead of us in the safeguarding of mine employees, or at least in the results accomplished. Many of the accidents in the coal mines of the United States are not due to want of precaution on the part of the mine management, but to the wilful negligence, and often disobedience of orders, on the part of the ignorant foreign miners with which our coal-mining regions have, unfortunately, become populated.

MINING IN BRAZIL.

We give considerable space in the present issue to a detailed description of the Morro Velho Gold Mine in Brazil, which we believe will be found of much interest. It is at present the great gold mine of that country; indeed, may be classed among the great gold mines of the world. Moreover, the opening of the mine as it is to-day, on the ruins of an old mine which had been worked for many years on the lines established by the original Portuguese owners, presented some difficult problems, the solution of which will interest mining engineers everywhere. The description goes into the details of operation somewhat closely, but this is necessary to a complete understanding of the case.

The Morro Velho Mine is owned by a British company—the St. John del Rey Gold Mining Company—and another important mine, the Ouro Preto, is also owned in London. There are, however, other gold mining properties, we are assured, which have barely been touched, or merely prospected, which present favorable opportunities for capital. That they have not yet been developed has been due to the still comparatively small population of the country, the lack of accumulated capital for investment and the very small number of experienced miners to be found. The prospector, as we know him here, does not exist in Brazil, and the native miner, to whom the existence of gold deposits is known, is content with the small returns which he can obtain from his primitive methods. The opening of the country to more active and enterprising methods of exploration and working would undoubtedly effect great changes.

But gold is not the only metal to be found in Brazil. In a previous issue—October 5th last—we referred to the manganese ores which are just beginning to be worked, and which promise to form an important addition to the world's supply. Iron ore deposits have been located in several provinces and may prove to be of great value later, when a metallurgical industry is organized. Other valuable minerals are known to exist, while there are vast unexplored regions which present tempting possibilities to the prospector.

The diamond mines of Brazil, once famous, have been temporarily eclipsed by the South African mines, but it is quite probable that the diamond industry may be successfully revived.

Brazil has a wide variety of climate, but all over the country mining work can be carried on throughout the year. In most of the districts where mining is likely to be carried on water-powers are found; and timber is everywhere abundant. The natural advantages of the country are very great and only wait proper development.

Hitherto, unfortunately, Brazil has been but little known to the people of the United States. The display which the Government made at the Pan-American Exposition has astonished many people, and served to give them a better opinion of our important and growing South American neighbor. It is to be hoped that this may be only the beginning of a better acquaintance and of closer commercial relations, which cannot fail to be of great benefit to both nations.

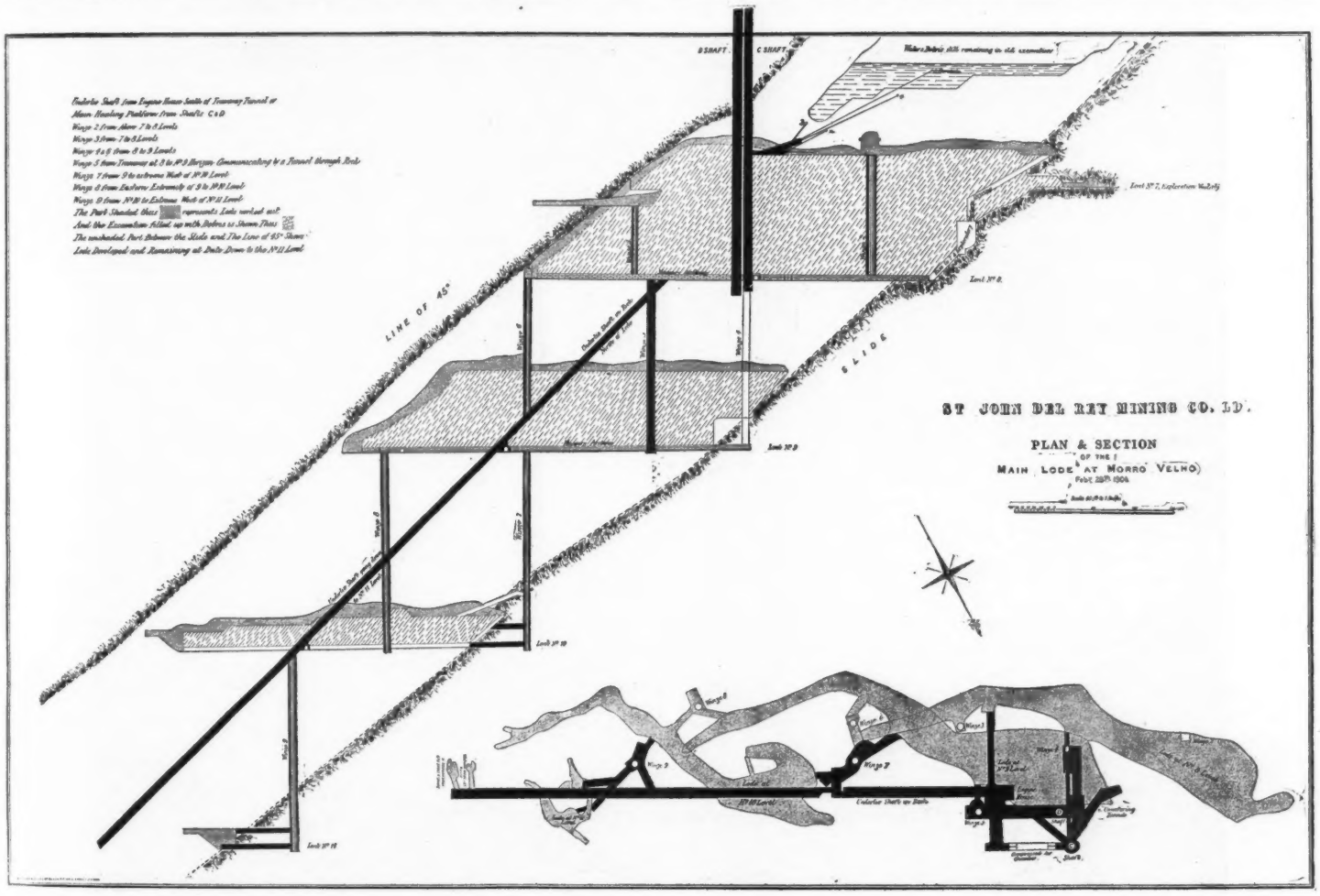
THE MORRO VELHO GOLD MINE, BRAZIL.

The best-known and most important gold mine at present worked in Brazil is the Morro Velho, in the State of Minas Geraes, which is owned and operated by the St. John del Rey Gold Mining Company, an English organization. This company's latest report—for the year ending February 28th, 1901—showed a production of 140,885 tons of ore, from which there was recovered $1,572,783 in gold, or $11.16 per ton; the working costs being $7.96 per ton. The company has a capital of $3,000,000 in stock and $650,000 in debentures.

In order to understand the present system of working the Morro Velho, it is necessary to give some account of its past history. The lode, which has a horizontal length of approximately 600 ft., and an average width of about 45 ft., dips from west to east at an angle of 45°. It was first discovered over 100 years ago by surface washings. The present company became possessor of the mine in the year 1830, but little was done until 1837. From that date to 1868 it was worked down in one excavation, supported in places by pillars of low-grade ore, but principally by native timber. In 1868 the timber caught fire, which resulted in the entire collapse of the excavation. In 1874 the new shafts were completed to the ore beneath the old excavation, and mining operations commenced on the same system as adopted in the first mine; a roof being left between the two excavations. In working, the south wall was found to be dangerous, and in spite of an enormous amount of timber work used to secure it, it was impossible to remove a large portion of the ore, which was the main support to the south wall. The timber used in the first and second excavations cost $1,500,000, but in 1886, when the excavation has reached a depth of nearly 1,850 ft., the dangerous south wall proved too much for the timber, and a disaster occurred, resulting in the loss of 10 lives and the entire destruction of the excavation. Unfortunately, owing to the close proximity of the shafts to the excavation, a considerable portion of them fell, and the mine was, for the time, entirely lost. The company then gave up hopes of ever working the main lode again, and turned attention to the Cuyaba and Gabiroba lodes near by. In 1888 Mr. Chalmers, the mine superintendent, presented plans to the directors for re-opening the Morro Velho lode, which have since been put into effect. Safety and permanence were his main objects, and to attain this two shafts were sunk at a considerable distance to the north of the lode, so that, should an excavation in the future become dangerous, the shafts would remain safe, the excavation could be deserted and a fresh one be commenced beneath. But it was also important to adopt some safer means of supporting the ore and securing the excavations, as the large excavations in the past had resulted in considerable loss of life from falling stones, owing to the difficulty of making proper examination of dangerous ground.

Two shafts—called C and D—were put down at an average distance from the eastern portion of the lode of 144 ft. Drifts were run to the lode at horizons (levels) 7 and 8, the former being under the bottom of the old mine, the latter being 133 ft. below No. 7. As soon as the lode was sufficiently opened to study its general character, it was decided that large excavations could not be safely worked and the only available means to avoid them was by overhead stoping and filling in beneath. This system was finally adopted and is now in working order. The system may be briefly explained as follows:

A drift is run from the shaft into the lode and extended the entire length of the lode. Winzes are sunk from the horizon above, which, in the future, will be about 308 1/3 ft. The drift is then extended to the entire width of the lode, and a masonry tunnel built from one end to the other, connecting with the winzes. Balanced cages are then fixed in the winzes for dropping down the mineral and lifting up the earth filling, which is obtained on the surface. The filling is then put in over the crown and sides of the arches and filled up to within 6 ft. of the mineral above. Holes are then bored by air and hand drills and the ore blasted down on to the filling. Blasting operations are not performed simultaneously all over the lode, but so arranged that one section is blasted and cleared while another section is being filled up. The mineral is filled into cars, each carrying 1¼ tons. It is then trammed back to the balanced cage in the winze, and the descending cage containing the car of mineral brings up the other cage containing filling, the weight of mineral exceeding that of filling. The car of filling is then run off to where it is needed, emptied, and run back to the point where the ore is lying ready for removal. The ropes attaching the two cages in the winze pass over a friction pulley, which is securely controlled by a brake.



The system has so far answered admirably. Large excavations are entirely done away with, the men get better ventilation, and the roof is always within reach of the pinch bar to remove dangerous stones; thus the danger of accidents from falling stones, which was so great in the old system of working, is now very considerably reduced.

Horizon 9 has now its lowest portion 2,520 ft. below surface. No. 5 shaft, which is sunk from Horizon 8, is the same distance from the lode as the main shafts; a communication with the lode at Horizon 9 being made by drifting. The explorations at Horizon 9 have so far proved satisfactory as regards size of the vein and quality of mineral, but only half the length of the lode has so far been explored.

It is an interesting feature in this celebrated lode that, as it has been worked down from surface to the present depth, in spite of considerable fluctuations in value, it has always been worth working, and at the deepest point there is nothing to indicate that any change is likely to occur; and Mr. Chalmers sees no reason why it should not be worked to double its present depth, which will mean a vertical depth from surface of about 1.5 kilometers. This working will be on the system described above, but the main shafts from Horizon 8, although keeping the same distance from the lode as the C and D, will not be vertical, but inclined in the same general direction as the lode. This is shown in the accompanying plan of the mine.

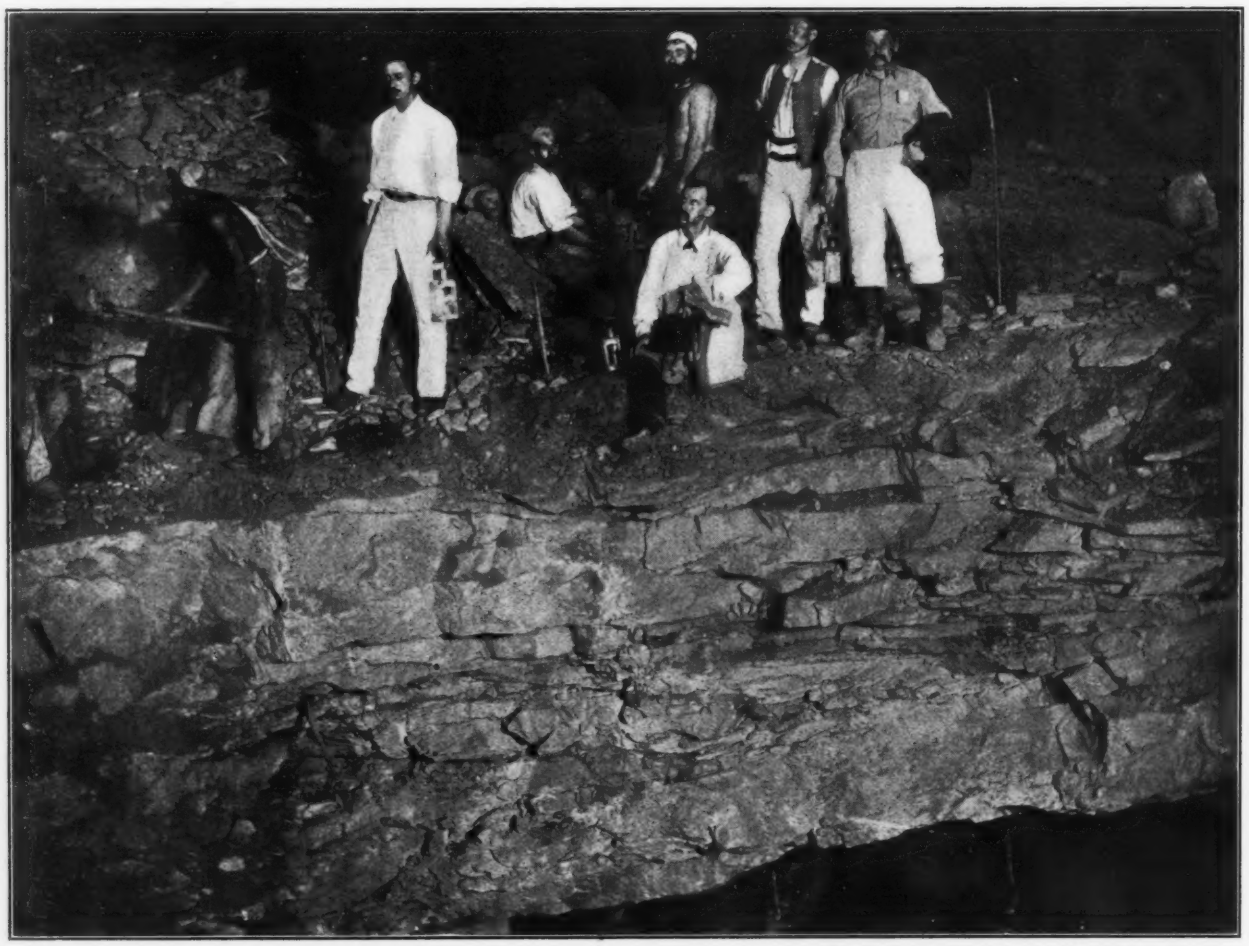
The hoisting engines working at Nos. 4 and 5 shafts have lately been converted from electrically driven engines to compressed air engines. The electric engines theoretically should have given a much higher efficiency than the present arrangement, but the electrical motors were not capable of standing the exceptional trying circumstances.

The damp, hot air charged with dust made the insulation difficult; but what was probably more trying was the heavy blasting performed within close proximity of the machines, and in actual practice the break-downs were frequent and the general performance of the engine irregular. The compressed air engines which have replaced them are giving satisfaction. The electric plant has now been re-erected on the surface for driving compressors.

One of the principal features in the new mine is the entire absence of dripping water, and this is difficult to understand when it is remembered that the excavation which was lost in 1886 is full of water, as well as a considerable portion of the first excavation. In preparing the plans for the reopening of the mine, the removal of the accumulation of water from the old workings was considered by Mr. Chalmers a matter of the utmost importance and one that needed the greatest amount of precaution in the design of the machinery to be applied, as well as great care in the execution of the work.

First, it was necessary to design a powerful hydraulic winding engine to work two automatic filling and discharging buckets in the accessible portions of the old A and B shafts. Each of these buckets held 3 tons of water. The engine was run continuously when possible, and the water removed by the buckets amounted to 800 tons in 24 hours. During an average rainy season the quantity of water falling into the sunken ground of the old workings amounted to no less than 20,000 tons. This, added to the springs in the mines, was so great that the accumulation could be lowered very slowly during the rains. Better progress was made during the dry seasons, but what with stoppages for repairs, etc., the rate was unsatisfactory, and the utmost the bailers could do was to go down to the depth of the fallen ground in the old shafts. It was necessary, therefore, to arrange some means for the removal of the water below the limit to which the bailers could work, and to drain the water to the bottom of the second excavation. Power was the first matter of importance. A stream was found in the Serra do Curral, to the northeast of the Morro Velho Mine. This was brought to a point on the hill on which the C and D shafts are sunk, by a canal of 10 m. in length. This water is conveyed down to the C shaft by 1,000 ft. of 12-in. pipe to the junction of the adit, where a hydraulic pumping engine specially designed by Mr. Chalmers is fixed in a chamber 50 ft. high, cut out of solid rock and lined in brick. The engine may briefly be described as consisting of two 20-in. rams set side by side in cylinders in which the power water is admitted and released by suitable valves. The rams are connected by a powerful cross-head, some tons in weight. The main pumping rod passes through the cross-head and at that point is 6½ in. in diameter. It extends down the shaft to Horizon 7 and tapers in that length down to 4¾ in. in diameter. From the engine up to surface it is 4½ in. in diameter, and there connects with a large balance beam and box, the latter containing about 35 tons. Another balance beam and box is situated in a chamber excavated in the rock at a depth of 620 ft. below the engine and contains a similar load. The 70 tons contained in the two boxes is to counterbalance the weight of the rods, moving parts of engine, and pumps in excess of the weight of water to be pumped from the mine. At a depth of 308 ft. beneath the engine, and at intervals of 308 ft. below the engine to No. 5 cross-cut, cross-heads are fixed on the pump rods carrying two 8½-in. rams; but there are two other pumping stations beneath this in the mine. The 8½-in. ram cylinders connect with convenient valve chests and steel cisterns, and the pumping is performed from one cistern to another. The total length of pump rods is 2,151 ft. The rising main which conveys the water to surface is of steel, 13 in. diameter, with a total length of 1,755 ft., and weighs 50 tons. The valve gear of the engine is so designed that, notwithstanding the head of water is 500 ft., giving a static pressure of 214 lbs. per square inch, hydraulic shocks are avoided. The stroke is 11 ft. and the engine makes 6 strokes per minute. The subsidiary valve gear allows of a pause at both top and bottom of the stroke, consequently the valves in the pumps close by gravity and cannot even be heard when the engine is working at full speed.

The plan adopted by Mr. Chalmers for tapping the old excavation and draining the water to the pump is as follows: At No. 6 cross-cut, at 1,770 ft. beneath the adit level, a drift was put off 100 ft. in the direction of the old excavation. The face of the drift was then cleaned and a diamond drilling machine worked by compressed air fixed. A short hole of 2½ in. diameter was first bored in the desired direction. This was enlarged by a reamer to take a stuffing box and gland, and a hydraulic arrangement specially designed for the purpose was fixed. This arrangement, which is known among miners as the "cannon," allows the drill rods to be passed through it, either for boring or for their removal without leakage. From the "cannon" branch two steel pipes, 3 in. in diameter, one for conveying the tapped water up the C or pumping shaft, and the other to a valve which allows the borings to flow out, but closes automatically when subjected to hydraulic pressure. Four holes were bored in search of the water in the old excavation, the average length being 136 ft., but at the point where the old excavation was supposed to be, and water expected, the lode was met with. The first hole was bored horizontally, but the remaining three were considerably elevated one above the other. From these borings it was evident that the old miners had made a considerable error in the depth at which they had represented the mine on their plans. From an engineering standpoint, the delay in tapping the water was most disappointing, as each hole cost a considerable amount in diamonds and labor, there being particularly hard quartz in some portions of the lode and the rock adjacent to it. So hard is this quartz, that it will grind the diamonds down in an extraordinary manner, and in some cases, while passing through it, the progress did not exceed 2 in. in 24 hours, while in the lode 15 ft. would be attained in the same time. However disappointing as these delays may have been, the company has been handsomely compensated by the fact that it has two years' longer supply of ore than first expected. The fifth bore hole was directed at a still higher point, and, as in all the borings, the greatest care had to be exercised in



Group of Mine Officials in Morro Velho Mine, Minas Geraes, Brazil.

thoroughly testing the pipes and hydraulic plant by frequently subjecting them to a pressure test of 1,000 lbs. per square inch. In May, 1896, at a distance of 320 ft. from the stuffing box, the water of the old excavation was first met with. The automatic valve for discharging the borings performed its part satisfactorily and closed against the pressure, and at No. 5 cross-cut, where the 3-in. pipe from the "cannon" discharges itself, the water began to flow, but not in sufficient quantity to keep the pump going at full speed. Accordingly, boring operations were resumed, and after penetrating a few feet of cracked rock an ample supply of water was obtained, and the gauge indicated a pressure of 640 lbs. The pumping engine was then gradually increased to full speed, which it has maintained with a few delays up to the present date. There has not been a mishap of any kind, and the enormous accumulation of water in the two excavations has been lowered 590 ft., and the pressure reduced from 640 to 406 lbs.

At the present time the main entrance to the mine is by the adit, which is substantially arched in brickwork; and for a distance of 263 ft. the sides are of concrete and the arching of Morro Velho bricks set in cement, making a permanent tunnel. The height at the mouth is 10 ft. and width 13 ft., allowing two tracks each of 2 ft. 2 in. gauge. There still remains a few feet of brickwork to complete the arching in soft ground, but the remainder of the adit is in hard self-supporting rock. The adit throughout is sufficiently lighted by electric light. At a distance of 946 ft. from the mouth of the adit is situated a large chamber lighted by electric light, where the D 13-ft. circular shaft passes through it. The C 12-ft. circular shaft descends through another chamber 54 ft. north of the D. Both of these shafts were sunk simultaneously from the surface, which is 340 ft. above the adit.

From surface to a depth of 120 ft., both shafts are lined with Morro Velho brickwork laid in cement, owing to the soft ground passed through; but from that point down to the bottom the shafts pass through hard rock. D shaft extends from the surface vertically to a depth of 2,330 ft.; C shaft reaches approximately the same depth, but the last 166½ ft. incline east to the dip of the lode. These shafts were commenced in 1889 and completed in 1892.

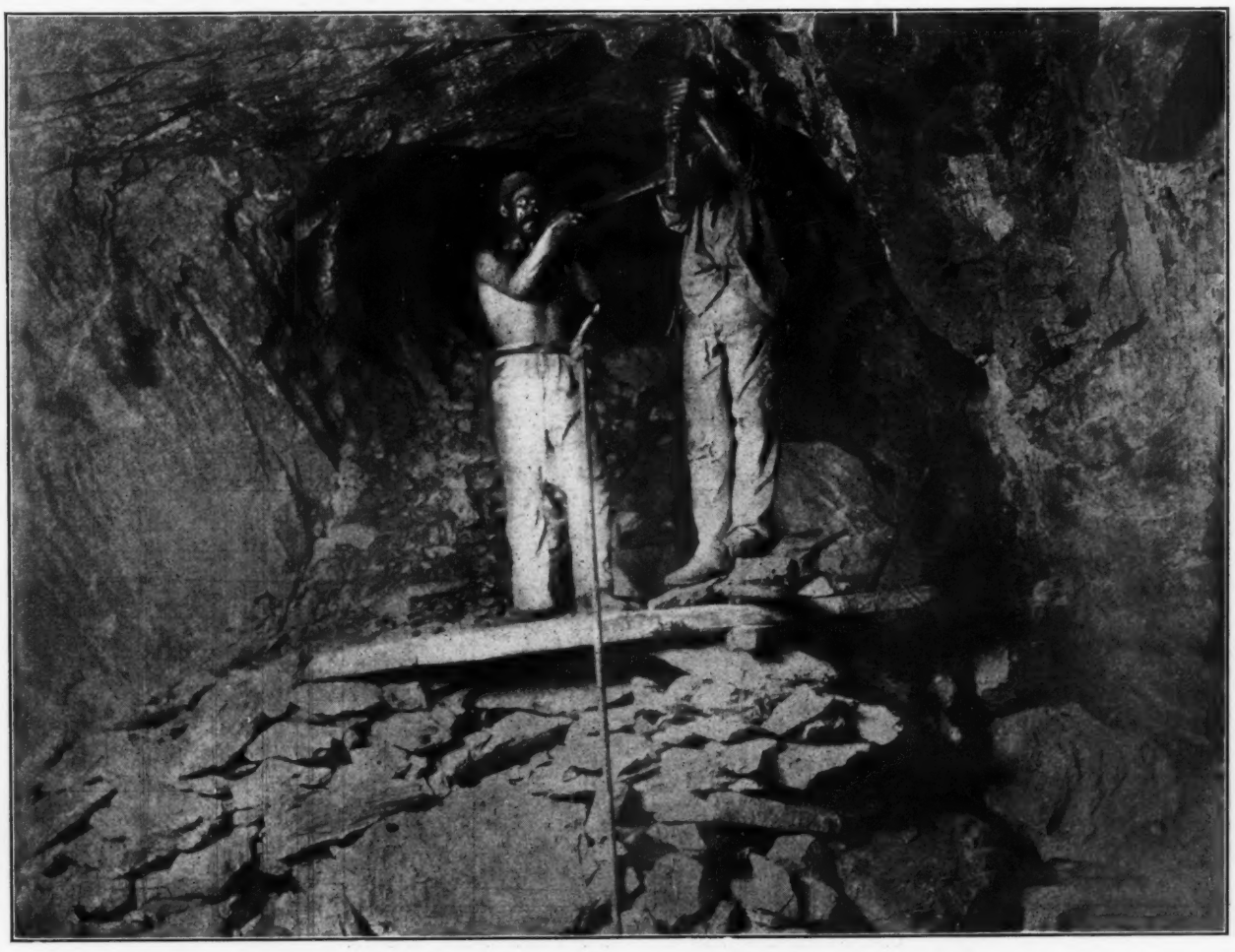
The average rate of sinking in D shaft was 78 ft. per month, while in C shaft it was 84 ft. The highest rate of sinking attained in one shaft in one month was 111 ft. Machine drills of various makes were thoroughly tried, but owing to the strata dipping at 45°, hand labor was found to give the best results.

The cages which lift and lower men and ore in D shaft are double-decked, each deck being capable of carrying two cars of ore or 12 men. C shaft cages are also double-decked, but are arranged principally for the convenience of dealing with the pump work in that shaft, and consequently carry only one car of ore on each deck, or 5 men.

The safety arrangements in the D shaft have proven, by an accident which occurred on December 4th, 1896, to be particularly efficient. The engine was lifting 20 men in one cage and lowering 20 in the other. The driver, although experienced with the engine, omitted to close the hydraulic valves of the engine in time, and, had it not been for the safety appliances, a serious accident would have occurred. As it happened, however, the rising cage was suspended by the safety clips, the rope liberated, and the men sustained no serious injury.

The maximum load that the winding ropes in D shaft have to stand is no less than 9 tons, but they are of the finest lock coil, manufactured from steel produced by Sir George Elliot & Company, and, although of only 1 in. diameter, have a breaking strain of 80 tons. The hoist engines that work the cages in both shafts are close to the mouth of the adit. These were especially designed by Mr. Chalmers to suit the exceptional circumstances. Both engines are worked by hydraulic motors under a head of 200 ft. The engine for D shaft is capable of bringing the cage from the bottom of the mine to surface in 2½ minutes. Frequently 300 tons of ore are brought to surface in 10 hours by this engine, and the average monthly tonnage for the last 6 months has been 8,300 tons. C shaft engine is a duplicate engine of the D as regards the main parts, but there is an additional arrangement of spur gearing, by which it can be used as a crab for lifting exceptional loads up to 20 tons in the pumping shaft. Nominally, each engine is of 200 H. P. The cages in D shaft, while lowering or lifting men, are arranged with portable seats.

At the mouth of the adit, on the works side of the Corrego, is situated the air compressing plant. Three of the compressors are driven by electric motors, and one large compressor is driven by hydraulic means. Close by is another quadruple cylinder compressor driven hydraulically. Opposite the adit mouth, and in direct line with the adit, runs the endless chain haulage to the mills. The full cars are run under the chain, which drops into a fork at the back part of the car. The cars are temporarily attached to the chain in this manner, at intervals of 20 ft.; there are 8 full cars on the up line and the same number of empty cars on the down or return line. A car containing 1¼ tons arrives at the landing at mill every 2½ minutes. From thence it runs forward to a weigh-bridge, the weight is taken, and it then passes into a tipple, which automatically causes the car to make a complete revolution, discharging its contents on an incline grating. The empty car then returns to the weigh-bridge, is weighed, and then runs on to the return line, where it is taken by the chain to the adit mouth. Here it is run off to the surface quarry, where it is filled with earth and stone, is returned to D shaft and lowered to the mine, to be discharged of its load of filling and to be refilled with mineral. The almost continual supply of ore that falls from the first grating amounts in 10 hours to 300 tons. The fine stone and dust fall through to a revolving grating, where all that will pass through a 2-in. hole fall into a receptacle, from whence the fines are elevated to the sampling bin by an endless chain and buckets. The coarse mineral that falls on the first grating is quickly picked over by two men, who throw all large waste into a chute discharging on a platform, where it is examined by the foreman. It is then dropped into cars, weighed and discharged on the waste pile. The mineral that remains on the first grating falls



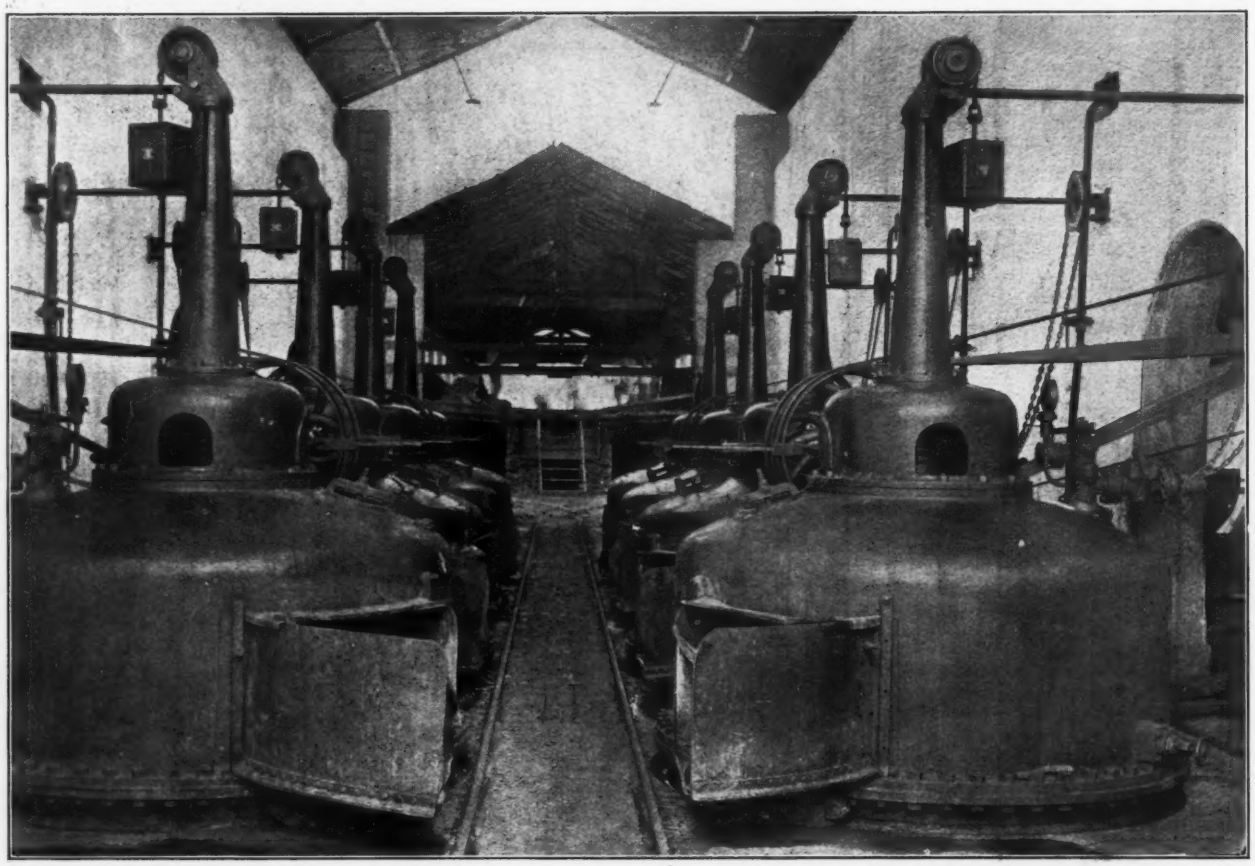
Overhead Drilling, Morro Velho Mine, Minas Geraes, Brazil.

into a large breaker made by the Marsden Company. The stone falling from it passes into the revolving grating referred to above, the fines taking the same course as those which pass through the first grating. The coarse stone in the revolving grating passes to a revolving picking table 25 ft. in diameter. Around two-thirds of its circumference are women who pick out the poor mineral and gangue, placing them on a shelf attached to the lower side of the table. By the revolving of the table it is conveyed to a point where it is swept into cars, which, after weighing, are discharged on the waste pile. The good ore on the table is carried round to two crushers, which break it into fine pieces that fall into a receptacle from which it is elevated to the sampling bin by a chain and bucket elevator. From the sampling bin it flows in a thin stream into a saddle-back car adapted for charging the bins of the mill. The stream of ore falling from the sampling bins is continuously sampled by hand; from these samples a general sample is taken and is assayed, from which the gold contents per ton is arrived at, and this, multiplied by the tonnage put into the bins for the day, gives the total gold content, which is the basis of calculation in the estimates of the recovery and loss by process. Formerly the sampling at Morro Velho was performed by taking hand samples of the pulp as it flowed from the mill, but this has been condemned as unreliable. Various mechanical samplers, which are the superintendent's invention, are at work, and he hopes in time to mechanically sample the whole of the ore that is put into the bins.

The 120-stamp mill is of an unsually substantial build, designed has been to do the whole thing automatically, which he has successfully accomplished. Not only is there a great reduction in cost over the old system, but the straking and washing is done more efficiently, and the work is performed by a man and two boys, who attend to the simple machinery. About 80 per cent. of the gold is retained on the plates with the richest pyritic sand.

This, after undergoing a further concentration, goes to the amalgamation plant. The amalgamation is performed in steel barrels lined with wood. Each barrel holds 2.7 tons of sand. To this is added about 50 lbs. of quicksilver, and a certain quantity of water; then the barrel is closed and set revolving. The amalgamation is generally complete in 12 hours, and the contents of the barrel are then discharged into separators which collect the amalgam and quicksilver and discharge the sand. By this amalgamation about 70 per cent. of the gold contained in the rock that has been treated by the stamps is recovered, but the sand discharged from the separators still carries gold that has not been set free from the particles of pyritic sand. Consequently, it undergoes a chemical treatment by the "oxygen process," which will extract from 70 to 80 per cent. of the remaining gold in a period of 4 hours at a comparatively low cost. Chlorination and the cyanide process have both been tried for treating the low-grade pyritic concentrates above referred to. The former proved too expensive, although the extraction was satisfactory. The latter took too long to extract the gold.

The "oxygen process" is the result of many months' experimenting



Oxygen Process Plant, Morro Velho Mine, Brazil.

by Mr. Chalmers, and made by Messrs. Fraser & Chalmers, Erith, England. In most California mills the main line of shafting is at the back of the mill, but in the Morro Velho mill it is situated in front. By this means the bearings are away from grit and more room behind the mortars is obtained. The feeders regulating the supply of stone into the mortars are suspended, which also adds to the room. Exhaustive experiments have proved that much of the gold in the Morro Velho ore is of such fineness that nothing but fine stamping will liberate it from the rock; consequently, fine gratings with a very large area are indispensable. The screens are of 3,600 holes to the square inch, and the large screen area is arrived at by having screens at both front and back of the mortars, the gauze itself being corrugated to also increase the area as much as possible. The weight of each stamp complete is about 800 lbs., lift 8 in., number of blows from 80 to 85 per minute. Any group of stamps can be instantly thrown off or started by a friction clutch. The water allowed into the mortar is considerable. The pulp passing from the mortars is conveyed by pipes to distributers which equally divide the quantity of pulp over the straking area.

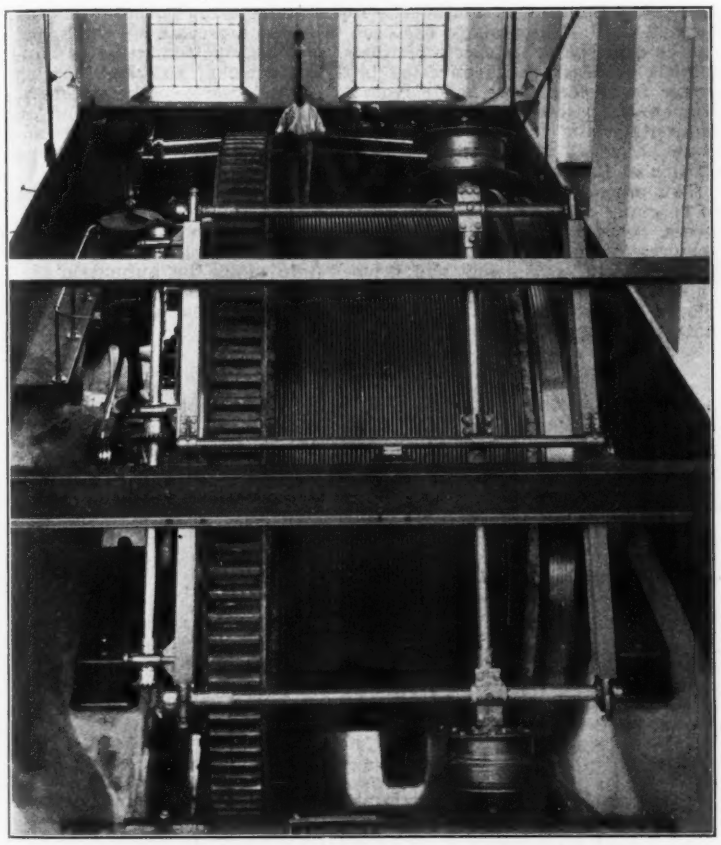
The straking and automatic washing portion of the process is probably the most interesting feature of the reduction works. Commonly in Brazil, and formerly in the old Morro Velho works, the method adopted for dividing the gold from the sand was by inclined beds covered with canvas or skins, over which the pulp was allowed to flow. At certain periods the covering of skin or canvas was taken up and hand-washed to collect the gold. A revolving strake was also used, which proved but little more efficient. On a large output the number of hands washing was considerable, and at best it was a very dirty process. Mr. Chalmers' object in arranging the above-mentioned plant on the low grade Morro Velho concentrates, and has been patented by Messrs. Wilder and Chalmers, the former being the company's reduction superintendent. First, an experimental plant was worked, which treated about 20 tons of sand per 24 hours; but a permanent plant, which contains many important improvements, and is treating 100 tons per 24 hours, is now in operation. It is quite possible by the aid of this process to bring the total recovery of gold contained in the rock to something close up to 90 per cent., but it remains to be proved by actual experiment whether the percentage recovery can be increased profitably. The reduction machinery is erected in a most substantial manner. All foundations are of concrete and other masonry of Morro Velho brick and cement. The roofing, which covers a very large area, is supported on steel girders. Trusses and framing are of steel, the covering of galvanized iron and glass.

For the last six months the output from the mine averages 8,232 tons, of which about 17 per cent. is waste, leaving an average of 6,802 tons for the mill.

The haulage of cars from the mine, the stonebreaker, elevating and picking machinery, the 120-stamp mill, as well as all machinery in connection with the first portion of the reduction plant, are driven by a novel and very efficient wire-rope transmission. The power is first derived from the main water supply by about 1,000 ft. of 24-in. steel piping. The head of water is 200 ft. and is applied to a 6-ft. 4-in. hydraulic wheel, incased, and standing on substantial cast iron framing, which is free to move on a cast-iron bed. On the axle of the motor is a grooved pulley 11 ft. diameter, on which runs the steel transmission rope of ¾ in. diameter. At a distance of 270 ft. and at an angle of 14° from the horizontal is situated a similar wheel on the main line of mill

shafting. The rope is of special steel and lay, and looks very small for the work that it performs, but the actual tension on the rope is also small, the power being made up by low tension and high velocity. The rope now running had been two years at work and has transmitted the whole of the power for the machinery mentioned above. The speed of the rope is close to 5,000 ft. per minute, but it shows next to no wear, except where the splice is made. In designing the transmission plant Mr. Chalmers adopted the novel plan of moving the water-wheel bodily backward or forward by compound worm and screw gear. It was first intended to do this by hydraulic means, but the compound worm and screw gear was finally decided on as the most convenient plan. The supply pipe telescopes to allow this movement, the static pressure being balanced by simple hydraulic means. When it is necessary to tighten the rope, the driver slackens the hold-down bolts securing the wheel bed to the slides, and by means of a hand-wheel draws back the engine to a position giving the desired tension on rope.

In line with the 300-H. P. motor is a second motor of similar design, which transmits 50 H. P. to the amalgamation plant. This engine is identical with the first as regards general construction, tightening arrangements, etc. Both motors are driven from the same supply pipe. The rope and driving wheels in the last-mentioned engine are similar to the other, but the distance between centers is much less. In all the engine houses at Morro Velho a powerful crane travels the entire



HOISTING DRUM, MORRO VELHO MINE, BRAZIL.

length of each house, so that repairs or changes to working parts can be quickly performed. In the same house is a low-speed lighting dynamo, which is giving very satisfactory results.

The company's woodworking and pattern shop, which is 118 by 76 ft., is well equipped. The largest circular saw is 72 in. diameter, with a bed traverse of 60 ft. There are numerous other saws, varying from 48 to 12 in. in diameter. There are also planing machines, drills, lathes, etc., many of which are driven direct by hydraulic means.

The foundry is a square building 59 by 59 ft. There are two cupolas in it, and castings up to 5 tons can be turned out when necessary. Rock drills are also being turned out and working very satisfactorily. Shoes and dies for the mill, crusher jaws, and other parts, make up the running work of the foundry. The fitting shop, which is 164 by 44 ft., is also thoroughly equipped with lathes, drilling and shaping machines, etc. The smith shop, which is 107 by 57 ft., has a hammer worked by compressed air, besides necessary forges, etc.

The electric generating station, which supplies power to the air compressors at the adit mouth, is situated at a distance of 1 km. at a point where there is an available head of 47 ft., which could not be conveniently utilized in any other manner but by transmitting the power to the mine electrically. The water is conveyed to the generating house by 350 ft. of 30-in. main, made at Morro Velho. The water is applied to two hydraulic motors, which transmit their power to the dynamo generators by belting. Each generator is capable of transmitting 75 H. P., but one only is used at a time. The voltage is 750, amperes 65. The electrical portion of the plant was made by Messrs. Scott & Mountain, England, and since the driven portion has been moved from the mine, for reasons already given, the performance of the plant has been very satisfactory. Another electric transmission of 120 H. P. has been erected at a point 1.6 km. from the mine, below the town. The water coming from the stamp mill and other machinery is conveyed to the site by an exceptionally large flume. In this instance, the head is only 40 ft., conveyed to motors by 30-in. pipes. Another transmission is under consideration, to convey 500 H. P., the distance to be transmitted 6.4 kms., and the object to supply compressed air sufficient to do away with hand drilling entirely.

A period of seven years was required to reopen the mine after the work was undertaken in 1888, and to establish the present milling outfit. The managers persevered under many discouragements, Mr. Chalmers, well supported by Mr. Frederick Tendron, chairman of the board of directors, being the leading spirit.

For the facts contained in the description above, we are indebted to Dr. Alcides Medrado, who has ably represented Brazil at the Pan-American Exposition as Mining Commissioner. Dr. Medrado, who has had wide experience as a mining engineer, believes that, great as the Morro Velho mine is, there are other gold properties in Brazil which were intended by nature to be greater. At Ouro Preto—an exceedingly rich mineral locality—situated in the State of Minas Geraes and in close proximity to the Central Railroad of Brazil, there are numerous veins of gold-bearing ore. Little effort has been expended on these properties, and they remain to-day as they did centuries ago, awaiting capital and energy to take advantage of their wealth. With some initiative development, Brazil would undoubtedly stride rapidly forward, and in a few years assume the position among the world's nations to which she is justly entitled by her mineral and other resources.

ELECTRICITY IN IRON SMELTING.

According to the "Echo des Mines et de la Metallurgie," three furnaces of 500 electric horse-power each have been erected in the valley of Camonica, Northern Italy, for the manufacture of pig iron under the Stassano patent. The furnaces in general outlines resemble cupola furnaces using coke, their special features being apparent in the provision made for supplying electric current and in the electrodes placed at the bottom of the boshes. In operating the furnaces, the ore is first pulverized and, if necessary, concentrated. A sample is then analyzed for the purpose of calculating the amount of carbon required to perform the reduction as well as the necessary amounts of fluxes. The quantities of carbon, lime or silica thus determined are pulverized and mixed with the ore. The material is then briquetted after adding 5 to 10 per cent. coal tar, and is ready for charging into the furnace. By means of the heat developed around the electric arc, the iron ore is decomposed, the oxygen uniting with the carbon to form CO_2. The latter gas ascends into the upper part of the furnace, where it effects a partial reduction of the ore. To obtain a ton (metric) of metal, 3,000 horse-power hours are required, which costs about 18 francs. There is an abundant supply of iron ore in the valleys of Camonica and Trompio in the vicinity of the works.

STRIKES AND LOCKOUTS IN BRITISH MINES.

According to the Thirteenth Annual Report of the Labor Department of the Board of Trade, the mining and quarrying industries of Great Britain were comparatively free from serious trade disputes in 1900, although, as compared with the previous year, there was a considerable increase in the number of disputes and in the number of persons affected. The increase in the aggregate duration was, however, very slight. The comparative figures as to numbers and duration are shown in the following table:

Year.	No. of disputes.	Number of workpeople affected. Directly.	Indirectly.	Total.	Aggregate duration in working days of disputes in each year.
1896.....	171	48,222	18,975	67,197	1,011,668
1897.....	127	35,615	13,777	49,392	1,445,843
1898.....	129	147,397	29,632	177,029	12,876,334
1899.....	109	27,020	19,811	46,831	504,428
1900.....	136	45,455	28,909	74,364	552,932

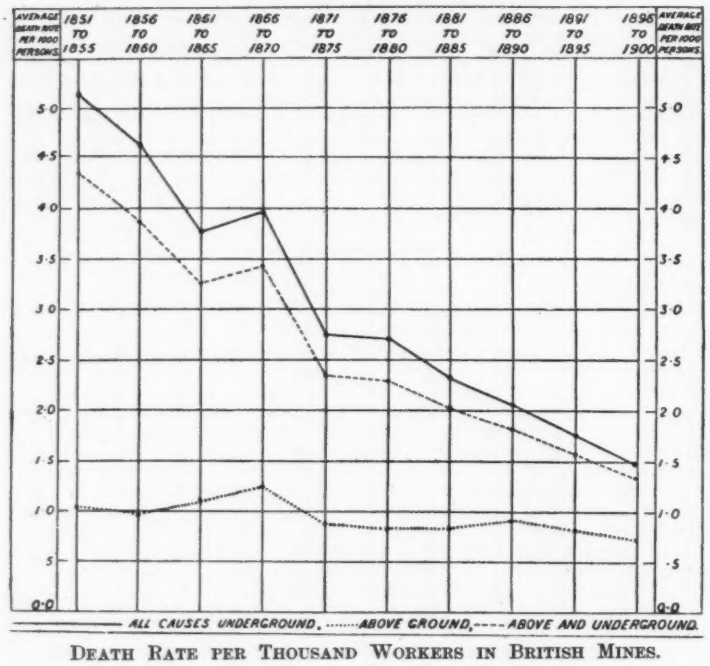
During the year the coal trade continued to be extremely active and wages high, facts the influence of which can be seen in the figures as to the duration of disputes.

The disputes formed 21 per cent. of the disputes in all trades, and the aggregate duration in working days 17.5 per cent. The most fruitful cause of disputes was the question of wages, these numbering 90, of which 46 were for increases. Over the question of hours of labor there were 4 disputes; the employment of particular classes or persons, 11; trade unionism, 15; others, 2.

GERMAN PUMICE STONE BRICKS.—In the Neuwied District along the Rhine between Coblentz and Andernach there is an extensive industry in the manufacture of bricks from volcanic sand and pumice stone, which are found along the base of the Eifelberg, a range of mountains which contained a number of volcanoes many centuries ago. In working the deposits the surface soil is stripped off and the sand is piled up, to be shoveled direct into the mixing bed of water and lime close at hand. The pumice comes out of the earth in pieces, varying in size from grains to lumps some 4 in. across. It occurs in layers, but is frequently interrupted by small cuticular patches of more solid fragments of lava. Before molding, the pumice is screened, the larger pieces being broken to pass through a sieve having ½-in. meshes. These screened pieces are then covered with a thin coating of cement, and the brick is molded. The cement is not mixed with the pumice so as to form solid cement blocks, but by the fragments being coated first. The brick is then obtained by these coatings adhering to one another. For the manufacture of 20,000 bricks about 4½ tons of lime are required. After the mixing process the substance is poured into iron molds provided with bottoms of detachable boards, which, after the removal of the molds, act as driers. When the brick has been exposed to the air for a very short time they are ready for shipment. No modern machinery is used. A workman makes from 800 to 1,800 bricks per diem, for which he receives 5 m. (about $1.19), and the working days are confined to the months between April and October.

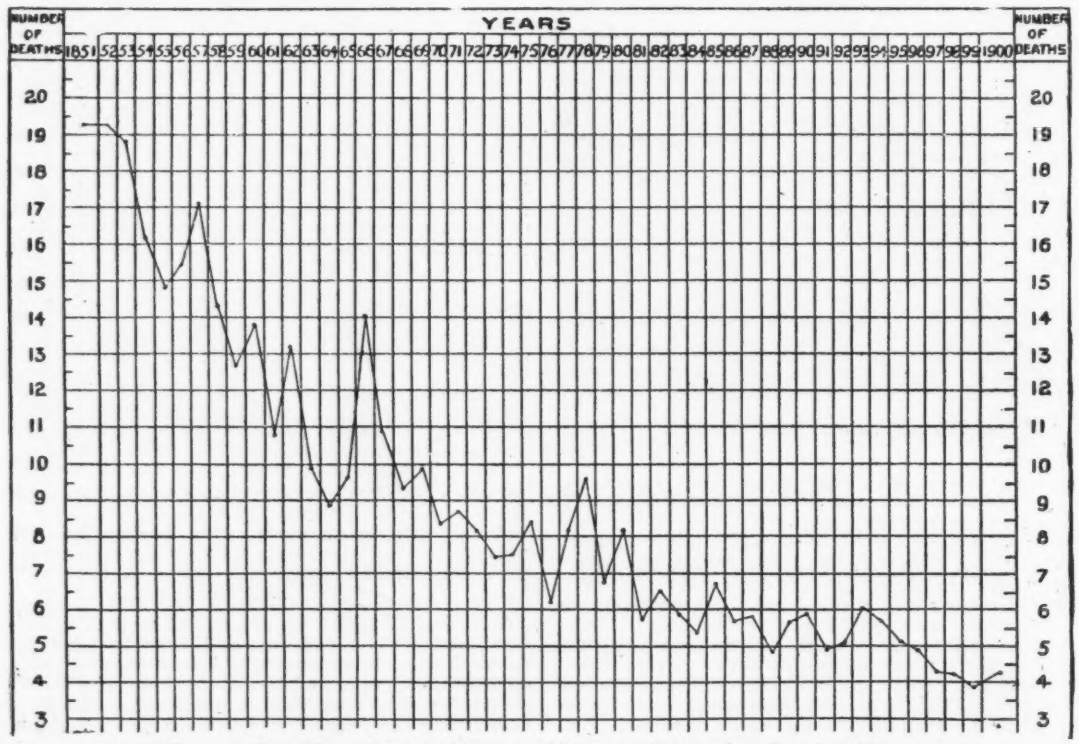
FATAL ACCIDENTS IN BRITISH MINES.

The accompanying diagrams showing the death rate in British mines per 1,000 persons employed and according to the amount of mineral raised, are reproduced from the Dr. C. Le Neve Foster's statistical report for 1900. The period covered by these interesting diagrams extends from 1851 to 1900, a total of 50 years. The figures show that in the early fifties the underground death rate was more than 5 per 1,000, while in 1900 the average death rate for underground workers was less than 1.5. The first diagram shows, taking the statistics by five-year averages, that there has been an almost constant decrease in the death rate. The one exception was in the period from 1866 to 1870, when,



DEATH RATE PER THOUSAND WORKERS IN BRITISH MINES.

because of a largely increased death rate in 1866, the average for the period was raised above that of the preceding five years. When the yearly rate is considered, there was not the same regular decrease, but the tendency is distinctly shown. This is exhibited in the second diagram, which shows yearly death rate according to the amount of mineral raised. In 1851 19 lives were lost for every 1,000,000 tons of product, whereas, in 1900, the number was less than 4.5. Modern mining methods, together with the proper inspection of the mines, has in fifty years decreased the death rate from accident about 80 per cent. This is certainly a gratifying exhibit. It should be stated that these statistics for the first ten years (1851 to 1860) include coal mines only, and these are the most hazardous. From 1861 to 1872 coal and iron ore mines are included, and from 1873 to 1900 the statistics include all mining operations. The diagram shows that the rate of decrease is less from 1871-5 to 1896-1900 than from 1851-5 to 1871-5, this being partly due to the inclusion of the less hazardous mining occupations.



DEATHS PER ONE MILLION TONS OF MINERALS RAISED IN BRITISH MINES.

LIGNITE AND PEAT BRIQUETTES IN GERMANY.

The scarcity and high cost of fuel last year and the unrelenting policy of the coal-producing syndicates in restricting their output to maintain high prices since the stress of demand has subsided, have combined to stimulate experiments and inventions which have for their purpose the better utilization of the vast deposits of peat and lignite with which Germany is endowed, says a recent consular report. It is stated upon official authority that the turf or peat beds of the Empire cover an area of 4,942,000 acres, and it has been deemed a reproach to German science that with such a wealth of material the people should suffer for want of fuel.

Already during the past dozen years great progress has been made in the manufacture and use of briquettes from brown coal or lignite, held together by a matrix of bitumen. These briquettes sell in Berlin for from $2 to $2.75 per thousand, are clean to handle, make no smoke, kindle readily, yield a quick, though somewhat evanescent, flame, and are the standard domestic fuel of the poorer and middle classes in most German cities. But the supply of brown coal is limited and its area restricted in comparison with that of peat, which has heretofore played an insignificant role in the fuel supply of Germany. This has been because of its large percentage of impurities. especially water, which in the humid climate of North Germany was difficult to eliminate, and which with the best preparation held the calorific value of weather-dried peat below the limit of availability for manufacturing purposes or even domestic fuel. The problem has been to devise a process by which peat can be deprived of its excess of water, and, without admixture of bituminous or other coal, converted into briquettes of sufficient heating power to replace those made from other and more costly materials. Numerous processes more or less successful have been tested on an industrial scale, until finally one invented by Engineer Stauber is announced, which has the indorsement of the Royal Chemical Testing Station at Berlin.

This process consists, so far as has been thus far revealed, of a series of specially contrived machines by which the crude turf is pulverized, fibers, roots and other impurities eliminated, the water removed by compression to the proper proportion and the cleansed material reduced to a uniform consistency and pressed into molds by automatic machinery. To what extent heat is used, or whether coal tar is ever employed as a matrix to strengthen the structure of the briquettes, does not as yet appear.

ARSENIC IN SPAIN.—The "Revista Minera" notes that the San Miguel Mine near Bustarviejo, in the province of Madrid, has lately been sold to Don Lorenzo Lulle. This property includes a large deposit of arsenical pyrites. It was worked long ago as a silver mine, but abandoned; later an English company operated it for a time and turned out commercial arsenic, but the venture did not prove profitable. With the recent increase in the demand for arsenic and the price of the material, it is believed that the mine can be worked again on a profitable basis.

FRENCH INQUIRIES IN RE PETROLEUM AS FUEL.—Consul Jackson, of La Rochelle, under date of September 3d, 1901, reports that a prominent railway official, who is anxious to try petroleum as fuel for locomotives, desires to obtain (1) practical information about Texas and other oil, such as analysis, results of trial, price, etc.; (2) information about American locomotives which are constructed to burn petroleum. Data, says the consul, may be sent to his office, and will receive careful attention from the railroad officials interested.

THE MINERAL RESOURCES OF NEW SOUTH WALES.

By T. A. Rickard.

The Geological Survey of New South Wales has recently issued a volume on the mineral resources of that colony, prepared by Mr. Edward F. Pittman, the Government Geologist, and the receipt of it suggests the desirability of directing attention to the work. For it is no awkwardly shaped report; it is neither book nor pamphlet, but a neat octavo of about 500 pages, which anyone would be glad to add to his library. A glance at the contents accentuates the excellent impression given by the style and appearance of the volume.

It contains an account of the extent, locality and the geological occurrence of the substances which contribute to the mineral resources of the colony, first the metals and the metalliferous minerals and then the non-metalliferous substances. In a brief supplement the statistics of production are added. An excellent map indicates the localities where the principal minerals are mined and shows the chief artesian

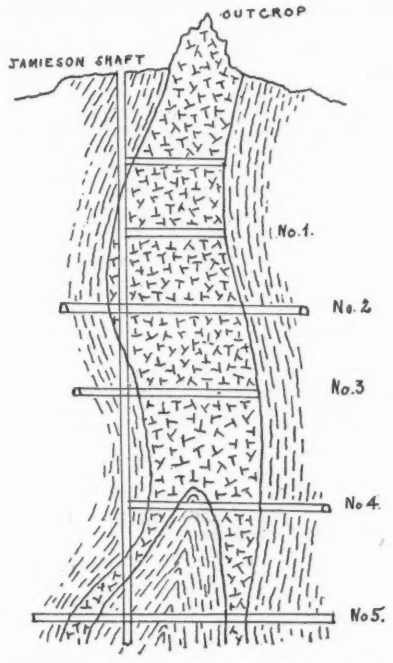


FIG. 1.—SECTION OF BROKEN HILL LODE.

water areas of the region. A large number of illustrations, mainly photographic, give a pictorial charm to the book. The historical sketch of the first discoveries of gold, which occupies the introductory pages, reminds one of the peculiar conditions surrounding the birth of gold mining in New South Wales. February 12th, 1851, is usually considered as the birthday of the gold-mining industry of all Australia, because that was the date on which E. H. Hargraves first found paying gold on the Southern Continent by washing gravel along the creek at Lewis Ponds, in the Bathurst District. He had been mining in California, and the likeness between the conditions existing there and in his own colony had impressed itself upon him to such an extent as to lead him to return home and commence prospecting among the Bathurst hills. Hargraves lived to a great age and died only a few years ago.

Before his labors had demonstrated that gold-mining could be made a profitable industry in New South Wales there had been a good deal said and written concerning the matter by Sir Roderick Murchison, who was at that time a great authority in the geological world, largely on account of his distinguished services in deciphering the Silurian and Permian systems as they occur in Europe and largely, it must be added, on account of his social position as one of the most popular savants of the day, held in high esteem alike by the Russian Czar and the English court. In 1844 he drew attention to the similarity existing between the gold-bearing rocks of the Oural Mountains in Russia, and certain specimens from Australia, shown to him by his friend Count Strzelecki*. The Oural rocks were highly altered crystalline schists, while those from Australia were silicious slates. On the maps which Strzelecki had prepared, Murchison noted the trend of the Australian mountains to be similar to that of his beloved Ourals, and as he was looking for an analogy he found one in that respect, as he had in the likeness to be observed between the quartz and rock specimens derived from the two regions, separated from each other by half the earth. On the strength of this coincidence he suggested that gold might be found in Australia as it had been already found, and profitably worked, in Russia. In 1846 he advised Cornish miners to go to Australia and search for gold†. In 1847 he learnt from Mr. W. T. Smith, of Sydney, that a specimen of gold had actually been discovered. When, in 1851, wonderful finds were made in rapid succession in different parts of New South Wales and Victoria, in rocks of an age, Lower Silurian, similar to those of the Ourals, they were heralded by Murchison's friends as the confirmation of a scientific dictum, and he became generally congratulated on his successful prediction. He congratulated himself and made a more sweeping generalization than any previously made by him. He went so far as to state that the Lower Silurian rocks were especially the geological horizon in which gold would be found. In the third edition of "Siluria," published in 1859, the "inductive reasoning" which led to his hypothesis is repeated, and he says, "My chief article of belief has now proved to be true, viz., that the rocks which are most auriferous are of Silurian age."‡ The unfortunate generalization is again worded thus, "The Palaeozoic accumulations . . . particularly the Lower Silurian . . . are the chief sources whence gold has been or is derived."† Australia appeared to corroborate this. It was not until 1864, when the results of the work of the Geological Survey of California, under Whitney, were published, that the Silurian formation lost a pre-eminence to which it was never entitled. The Californian rocks were found to belong to the Jurassic. Murchison's hypothesis was confounded. It was a fallacy which the latter development of gold-mining districts in other parts of the globe has shattered into as many fragments as there are subdivisions of geologic time.

In New South Wales gold has been worked in lodes traversing the Carboniferous, Devonian and Silurian rocks. It has also been obtained from Permo-Carboniferous conglomerate and Triassic sandstone. In this region, as elsewhere, the occurrence of the precious metal is intimately connected with intrusions of eruptive rock.

The report under review makes no effort to give a description of all the various scattered occurrences of gold in the colony, but something much more useful is done, namely, typical deposits are described with sufficient detail to render them serviceable to those who are engaged in mining. The "saddle-reef," for example, represents an interesting type which is found in the Hargraves Gold-field and also at Broken Hill. In the former district the prevailing formation consists of Upper Silurian slates and claystones which have been folded into a series of saddles and troughs. Along the crests of these folds there have been found bodies of gold-bearing quartz resembling those of the well-known district of Bendigo, in the adjoining colony of Victoria. So far, three saddles have been proved to succeed each other in vertical sequence, but this represents a depth of less than 100 ft., so that it is a far cry to the extensive explorations of Bendigo, where a depth of over 3,000 ft. has been attained by several mines. In this depth no less than a dozen saddles have been encountered, and of the total number about five have proved profitable.‡

But New South Wales can boast of a saddle-reef of an importance greater than any single line of reef which even Bendigo can put forward. Mr. Jacquet, of the New South Wales Geological Survey, was the first to demonstrate that the great Broken Hill silver vein was really a saddle-reef. It follows the crest of an anticlinal fold in a series of crystalline schists. The outcrop of the lode represents the neck of the ore formed within a very steep fold. The split in the lode, which was encountered just below the No. 4 level, represents the parting of the ways, namely, the separation into what the Bendigo miner would call "the east and west legs" over "the center country" of the anticlinal axis. See Fig. 1. The Broken Hill lode is certainly the most important saddle-reef as yet discovered by man; it exposed, when I visited the

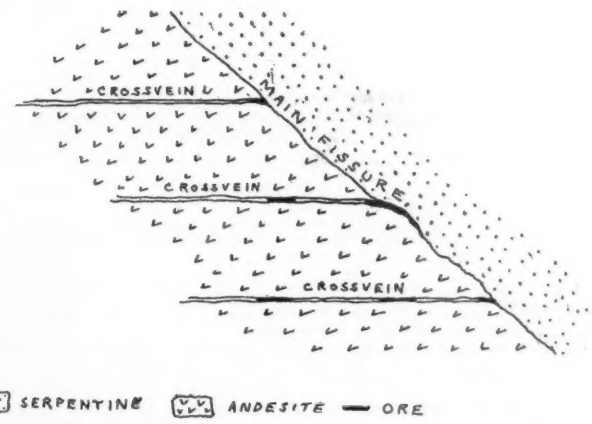


FIG. 2.—MODE OF OCCURRENCE OF ORE-BODIES AT LUCKNOW, N. S. W.

mine in 1891, a width of 300 ft. of pay ore. On the third level of the Proprietary mine I saw a width of 202 ft. of ore averaging 50 oz. of silver per ton and 35 per cent. lead. The Broken Hill Proprietary mine has produced, from 1885 to 1899, inclusive, no less than 4,167,928 tons of ore, yielding 101,061,080 oz. silver, 46,127 oz. gold, 403,624 tons lead, and 4,250 tons copper.

The Lucknow Gold-field has seen many vicissitudes on account of the uncertain character of the ore occurrence, which has characteristics very unlike any other gold deposit in Australia. Extremely rich bonanzas have been found separated by intervals of ground which are quite barren. It was only after a good deal of exploratory work had been done, in the course of many years, that the structural geology of the district became deciphered. The accompanying sketch, Fig. 2, will explain.

It is an instance of enrichment where two vein systems meet. A well-defined fracture follows the contact between serpentine and andesite. This fracture or "main fissure" is identified with the line of movement because it is marked by striations and polished surfaces, as well as by the evidence of actual faulting. The serpentine is undoubtedly an alteration from the andesite. The former occurs as a long narrow lens having a maximum width of about 300 ft. Boulders or rounded fragments of rock occur embedded in the serpentine near the boundaries

*"Russia in Europe and the Oural Mountains." "Transactions" Royal Geographical Society, Volume XIV., pages 437 et seq.
†"Siluria." Third edition, page 474.

*"Transactions" Royal Geographical Society of Cornwall, 1846, page 324.
†Ibid.
‡"The Bendigo Goldfield," by T. A. Rickard. "Transactions" American Institute of Mining Engineers.

of the latter. These boulders consist of an envelope of serpentine covering an andesite which is identical with the surrounding rock.

The main fissure dips under the serpentine and has the andesite for its footwall. It consists of a mere parting, devoid of ore save where it encounters a series of cross-veins coming in from the west. Where these meet the main fissure rich pockets of ore have been found. It is a peculiar fact that these cross-veins have a quartz filling until they approach the serpentine; the quartz is then replaced by calcite, and by rich ore. Although the superficial parts of the cross-veins are said to have carried gold in the quartz, it appears to be the rule that the deeper workings do not find pay-ore under any circumstances save in the calcite. The ore consists mainly of an arsenical pyrite with which metallic antimony is associated. When ordinary iron pyrite and pyrrhotite replace the mispickel (arsenical pyrite), as happens in the lower levels, the change coincides with a diminution in gold.

New South Wales possesses numerous alluvial deposits yielding tin. The most interesting are those on Vegetable Creek, in the Emmaville District, which have been made the subject of a valuable memoir by Professor David.* The superficial gravels were first worked in 1872, and in 12 years they yielded 15,000 tons of stream tin in the form of cassiterite. The total area worked covered about 150 acres; the depth of the pay dirt is estimated to have been 2½ ft. only, with an average

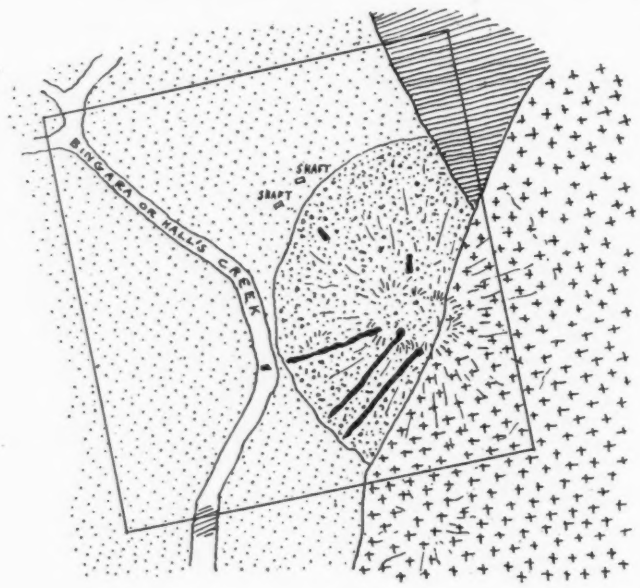


Fig. 3.—Plan of Diamontiferous Volcanic Pipe, Dinoga, N. S. W.

stripping of about 5 ft., so that it is seen that the yield per cubic foot was very high. The total yield of the Emmaville District, to the end of 1899, amounted to 51,758 tons.

In the course of exploiting the surface gravels it was found that there were deeper deposits of stream tin in the form of old river channels which received the drainage of the surrounding country during early Tertiary times and were, subsequently, covered by lava flows, composed of basalt, which have protected the gravel from erosion. They correspond to the deep leads of gold-bearing gravel, such as have made the Forest Hill divide (in California) and Creswick (near Ballarat, Australia), so famous in mining history.

The Vegetable Creek tin lead is distinguished by being composed, along a portion of its course, of two sheets of lava, both of which cover a thin bed of tin-bearing gravel. This reminds one of the celebrated Band and Albion Mine at Ballarat, where two alluvial channels, each covered by basalt, were successively encountered by sinking and, finally, when the bed-rock of Silurian slates was reached that, too, was discovered to have the outcrop of a lode of gold-bearing quartz, which was subsequently followed to a depth of 1,200 ft. Nature had been both ingenious and lavish in giving one small portion of ground several deposits of gold ore unlike in origin, in age and in form. The Vegetable Creek lead was very rich; it averaged about 3 ft. in thickness, with a maximum of 14 ft.; the yield in tin varied according to the contour of the old river bed, being poor where the bed was steep and rich where it was flat. The width of the channel varied extremely, from a few feet up to 400 ft. The greatest depth at which the tin-bearing gravel was worked in this district was 247 ft. below the surface.

The geology of the district is simple. Claystones of the Carboniferous period are intruded by tin-bearing granite, the tin occurring mainly in bands or dikes of greisen, distinguished from true granite by containing quartz and mica without the feldspar. The disintegration and erosion of this tin-bearing greisen afforded the material which became assorted and deposited by the action of water in the river channels of the early Tertiary period. Subsequent volcanic activity in this region supplied the basalt which covered the old surface as with a blanket and so preserved the tin deposits which had been laid down in the Tertiary valleys.

An interesting exception to the rule that these caps of lava, protecting alluvial channels, whether of tin or gold, are usually composed of basalt or a rock of allied basic composition, is furnished by the deep-lead found in Rose Valley, near Emmaville, where an acid lava, in the form of feldspar porphyry, covers tin wash occupying a gutter which is also in feldspar porphyry, the latter occuring as an intrusion amid Carboniferous claystones. These alternate with the porphyry in furnishing the bed-rock of this interesting alluvial deposit.

Diamonds are restricted in occurrence; although they are frequently encountered, in small quantity, in alluvial deposits of all kinds in different parts of the world they are rarely found in place. In the few instances, in South Africa and in India, for example, where they have been found in the matrix, that matrix has proved to be a rock of volcanic origin.

In New South Wales the diamond is found widely distributed amid the gravels which have been worked mainly for gold or tin. In the vicinity of Inverell there has been more systematic mining for diamonds than anywhere else in the colony. During 1899 the output was 21,830 carats, but in 1900 the gravel gave poor results and operations ceased. From 1897 to 1900 the output was 37,400 carats of diamonds and 39 tons of stream tin.

The deposits just referred to, consist of sands and gravel occurring in patches under the basaltic caps of isolated hills. These were once a part of the continuous channel of a Pliocene river, nearly identical with the present valley of the Gwydir River, which was subsequently covered by a sheet of basalt. The erosion of the latter has been followed by the removal of the underlying gravel, so that only a few remnants remain in the shape of flat-topped hillocks representing patches of basalt which have survived denundation.

The gravel worked at Inverell had an average thickness of about 3 ft., with a maximum of 14 ft. The largest diamond obtained weighed 6¼ carats, while the average size was one-third of a carat. A large washing plant was put up at Boggy Camp. It was modelled on the plan of the machinery used at Kimberley, and had a capacity of 300 cu. yds. of gravel per 8 hours.

The occurrence of diamonds at Ruby Hill is of greater interest because of an interesting analogy with the geological conditions known to exist at Kimberley. At Ruby Hill, which is in the county of Murchison, there is a small hill, only 80 ft. high, which is intersected by several dikes of basalt. One side of the hill consists of breccia and the other half is made up of quartz felsite. The basalt dikes penetrate the former. See sketch, Fig. 3, which is taken from Mr. Pittman's survey of the locality.

The sedimentary rocks of the district consist of banded claystones and tuffs, of Carboniferous age. These have been intruded by a mass of quartz-felsite, the original line of contact betwen the felsite and the sedimentaries passing across Ruby Hill near its center. Later still an eruption of volcanic breccia occurred at the old line of weakness afforded by the contact of the felsite and the sedimentaries; and a volcanic pipe, similar in many respects to those seen at Kimberley, was formed. The hill is the eroded wreck of this volcanic pipe.

Diamonds have been found in this breccia, and particularly in that crystalline aggregate of garnet, anorthite and chrome diopside which is known as eclogite. Now, it is a remarkable fact that Professor Bonney, who has for many years made a special study of the diamond deposits of the Kimberley mines, discovered that eclogite was especially associated with the occurrence of the diamonds there, and quite recently, in 1899, he formulated the conclusion that the diamond is a constituent of the eclogite, that it was probably the first mineral to crystallize in the magma, and that, therefore, the "blue ground," which is a volcanic breccia, is not the birthplace of the diamond or of the garnet, olivine and other associated minerals.* The resemblance between the Ruby Hill deposit and that at Kimberley is remarkable. In both cases the diamond is associated with eclogite occurring in an agglomerate which fills a volcanic vent, and in both cases it seems probable that the vent broke through a deep-seated conglomerate containing water-worn pebbles of eclogite.

To the Colorado miner there is suggested a further comparison with certain extraordinary occurrences of gold and silver ore to be found in his own State. At Rosita, in the Wet Mountain Valley, there occur two notable examples of volcanic pipes filled with agglomerate. I refer to the Bassick and Bull-Domingo mines. Very rich ores, carrying gold and silver, have been found coating boulders of andesite within chimney-like openings penetrating the older rocks. Rosita is a small volcanic area of Tertiary age. The deposition of ore is ascribed to the action of aqueous vapors, rather than dry gases, which have circulated through fumaroles during the last stages of volcanic activity. Although the resulting deposits of valuable material are utterly unlike the gem-bearing ground, referred to above, nevertheless the similarity in the mechanical action by which nature has brought about the formation of such treasures is highly suggestive.

It is in this way, by suggesting comparisons and inciting investigation, that reports, such as this of the New South Wales Geological Survey, are of great value. It has remained for Mr. Pittman and his fellow-workers to prove that blue-books need not be blue, whether in an objective or a subjective sense, and that all departmental literature is not necessarily of that dry-as-dust variety which causes them to be consigned to the furthermost shelves of the library. As one who has warm feelings for the land where at this season "the wattle gold trembles 'twixt shadow and shine" I would like to tender my sincerest compliments upon the excellence of the "Mineral Resources of New South Wales."

*"The Geology of the Vegetable Creek Tin-Mining Field," by T. W. Edgworth David.

COAL DISCOVERIES IN BELGIUM.—Large coal veins, running from the German Rhine-Westphalian coal districts toward Limburg, in Belgium, are reported to have been discovered. If the coal is as good in quality as that of the Rhenish-Westphalian district, it will exert a considerable influence on the European coal trade.

*"Proceedings" of the Royal Society, LXV., No. 417, pages 235, 236.

THE PAN-AMERICAN EXPOSITION AT BUFFALO.—XV. MISSOURI.

By Mrs. Harriet Connor Brown.

Inside a dark-red arch surmounted by the arms of the State, Missouri has set up her exhibit in the Mines Building at the Pan-American Exposition. The chief feature is found in the lead and zinc, principally from the counties of St. Francois and Jasper. The output of these metals in Missouri aggregated last year about $13,000,000. The mineral industries have grown rapidly in the last few years with the invention of new processes for treating the ores. Besides lead and zinc the State has great wealth in iron and granite and in coal; but it is the two metals named which have been exploited in the State exhibit.

The magnificent showing of lead and zinc—incomparably superior to anything of the kind exhibited by any other State or country—is largely to the credit of Mr. Fayette P. Graves, Missouri Commissioner of Mines and Mining, and his assistant in charge of the exhibit, Mr. James A. Reeves, of Joplin. Mr. Graves has been actively engaged in the lead mining industry in St. Francois County for the past 33 years. He has been general manager of the works of the Doe Run Lead Company for about 14 years, and is a recognized authority in all that pertains to

THE MISSOURI EXHIBIT IN THE MINES BUILDING AT THE PAN-AMERICAN EXPOSITION.

the lead industry. He is the fortunate possessor of a valuable mineral collection, on which he has spent much time and money. Four of the cases in the exhibit contain rare and beautiful specimens that are his personal property. Mr. Reeves has also contributed to the exhibit numerous valuable specimens which he has collected in the course of many years' experience in the zinc fields of Jasper County.

The exhibit, which covers 400 sq. ft. of space, is tastefully arranged near one of the few windows in the Mines Building. Deer antlers and pictures of Missouri scenes adorn the wall space. Among the latter is a picture of a Joplin lead and zinc mine made out of ores of the district by Mrs. Julia Rogers Kirsch. Guarding the entrance to the exhibit on either side is a large owl made of fire-clay and set up here by Evans & Howard, of St. Louis.

A tall circular show case occupies the center of the booth, and around it the main part of the exhibit is arranged on shelves and in cases. On the floor at one side of the entrance arch is a pile of lead bars from the St. Joseph Lead Company, of Bonne Terre. Opposite is a corresponding pile of spelter from the Rich Hill Zinc Works.

One of the most remarkable samples of ore is a huge block of lead ore from Banker's Land, Joplin, in which the crystals are particularly large and perfect. The Central Lead Company and the Columbia Lead Company, of St. Francois County, and the Catherine Lead Company, of Madison County, are among those who have specimens of lead ore in the exhibit.

Mill products are likewise well represented. The Doe Run Lead Company has bottles of the crushed ore and jigged ore side by side. The St. Joseph Lead Company, of Bonne Terre, and the Granby Mining Company, of Oronogo, also exhibit mill products in bottles. Six large bottles contain white lead, and also red and blue colors, and are exhibited by the Picher Lead Company, of Joplin, which is also represented by a mural painting of its works on the ceiling of the building.

Frye & Company, of Joplin, exhibit a collection of bottles containing hand-cleaned ore which runs 64 per cent. zinc. Steam-cleaned ore, containing 62½ per cent. zinc, is exhibited by the Marion Mining Company, of Joplin. One collection of small bottles shows in succession the ore as it is when it comes to the smelter, as it is minus the sulphur, when ready for the furnace, the metal and the residue.

The most interesting feature of the exhibit is a contribution of Mr. Reeves in the form of two twin calcite limestone crystals of gigantic size and perfect formation. The largest measures 32 in. from point to point and weighs 250 lbs. They were found in the vicinity of Joplin. A mass of golden calcites weighing from 100 to 200 lbs., and found near Bonne Terre, is also exhibited by Mr. Graves. Other States have calcite crystals of superior formation, but none of them produce anything of the kind which can rival the immense dog-tooth calcite of Missouri.

Among Mr. Reeves' treasures is a case of specially fine crystals. A particularly good one shows a fringe of iron pyrites around a rhomboid of amethyst seen in the heart of the crystal. Fine specimens of ruby crystal, of colorine or zinc silicate, and of lead carbonate are included in this little collection.

To make complete the exploitation of the lead industry, an exhibit of shot is made by the Markle Lead Works of St. Louis. No less than 46 sizes of shot, ranging from buckshot to butterfly shot, are exhibited, along with sportsman's flying targets, clay pigeons, etc.

Southeastern Missouri is represented in the exhibit by some fine samples, polished and unpolished, of red granite, said to be equal to the best Scotch granite. Many handsome buildings in St. Louis and other parts of the State are constructed of this stone, and the development of the granite quarries is now keeping pace with that of the State's other mineral resources.

Missouri's coal mines and iron deposits are not represented in the exhibit, but the people of the State can be justly proud of the fact that in the line which she has made prominent she has not merely surpassed all competitors, but gone so far ahead of them that there is no room for comparison. It is estimated that the mineral resources of the State add about $18,000,000 annually to its wealth, and the prospects for an even greater production are most promising.

MANGANESE ORES IN NEW SOUTH WALES.—According to a recent consular report manganese ore exists in considerable quantities in widely separated localities in New South Wales, but owing to the low prices obtainable for ore containing not less than 50 per cent. metal the mining of it has not been carried on to any great extent. Most of the deposits are far from the seaboard, rendering transportation so costly that there is little profit in the production.

NEW COAL MINES IN FRANCE.—According to the Echo des Mines et de la Metallurgie, a coal mine has been opened in new territory, near Aime, in the arrondissment of Montiers-Salins, with apparently favorable results. The coal occurs in two beds having a combined thickness of more than 5 meters, and although of friable nature and rather high in ash, it presents good calorific power when made into briquettes. Machines capable of briquetting 300 tons per day have been installed. The field has good advantages as to transportation, and is most favorably situated for export trade with Italy and Switzerland.

MINERAL IMPORTS AND EXPORTS OF SPAIN.—Imports into Spain for the eight months ending August 31st included 1,340,484 tons coal and 139,016 tons coke. Imports of metals included 4,079 tons pig iron, 4,498 tons wrought iron, 24,114 tons steel and 1,354 tons tin-plates. Exports of minerals for the eight months are reported by the "Revista Minera" as below, in metric tons:

	1900.	1901.	Changes.
Iron ore	5,390,306	4,495,624	D. 894,682
Copper ore	692,032	709,449	I. 17,417
Zinc ore	40,062	51,251	I. 11,189
Lead ore	2,528	1,994	D. 534
Salt	149,110	219,133	I. 70,023

Exports of metals included 14,387 tons pig iron, against 17,536 last year; 18,310 tons copper, against 17,504 tons in 1900; and 96,724 tons lead, against 103,422 tons last year.

SAULT STE. MARIE CANAL TRAFFIC.—The official report shows that from the opening of navigation up to October 1st the total freight passing through the Sault Ste. Marie canals was 20,369,065 short tons, of which 3,904,553 tons were west-bound and 16,464,512 tons east-bound. To the corresponding date in 1900 the total was 19,901,473 tons; showing an increase of 467,592 tons this year. The mineral freights included this year were, in net tons, with the exception of salt, which is stated in barrels:

	1900.	1901.	Changes.
Anthracite coal	422,375	529,788	I. 107,413
Bituminous coal	3,178,113	2,896,483	D. 281,630
Iron ore	13,102,470	13,583,867	I. 481,397
Pig and manufactured iron	109,386	112,990	I. 3,604
Copper	95,518	61,893	D. 33,625
Building stone	26,759	32,709	I. 5,950
Salt (barrels)	200,456	347,017	I. 146,561

The number of vessels passing through the canal this year was 14,561, against 14,919 last year.

UTILIZING SLAG IN GREAT BRITAIN.—In a description of the works of Bolckow, Vaughan & Company, in England, the London "Iron and Coal Trades Review" says: "About 60 per cent. of all the slag produced in the steel works is obtained in the process of manufacturing basic steel. This slag is all removed to a special building outside of the main works, where it is granulated and packed for removal to be used for manure. This is a business of which the Germans have made a specialty, and hence the company has entrusted the disposal of the basic slag to a German firm, who take the material at a fixed price per ton and make it into fertilizers in the building referred to. This firm employ their own workmen and dispose of the granulated slag in various home and foreign markets in their own way.

"The total quantity of blast-furnace slag produced by Bolckow, Vaughan & Company is over 1,500,000 tons a year, and this they have mainly employed in the past in filling up the foreshore of the Tees in front of the works, until they have reclaimed a large area on which, at some not far distant date, other works may be built. There is a considerable area of water intervening between the steel works and the electric light station, which it is proposed to reclaim within the next six years. The slag obtained in reducing hematite ore is of little use for ulterior treatment, owing to the quantity of lime it contains, but it is otherwise with Cleveland iron slag, which, here as elsewhere, is employed for making cement or for other kindred uses."

NOTES ON THE CAROLINA GOLD DEPOSITS.

By Walter Harvey Weed.

The Carolina gold deposits have been worked for the past 50 years and have yielded a gross product of $20,000,000 to $30,000,000. Notwithstanding this favorable record and the fact that the ore is found to continue in depth, the present state of the industry is one of almost complete inactivity. This is due primarily, of course, to the fact that many of the veins were only worked in the upper portion of the deposit, where the ore was entirely free milling. As soon as the unoxidized sulphurets were encountered the ore was no longer believed to be susceptible to economical treatment and the properties were usually abandoned. The present condition is believed to be due to two causes: First, an antiquated system of mining work, and, second, a lack of systematic development of the properties. In previous years most of the mining was done by underhand stoping, which can only be applied to extremely high-grade ores.

In regard to the treatment of the ore it may be said that the Thies process has been successfully applied to several properties in the slate belt, but there are many properties which do not seem to be adapted for the Thies process, and yet they carry values which are high enough to warrant successful exploration and which under proper treatment should yield large dividends to the owner.

Character of the Ore.—The gold ores all occur in what has been commonly called the "Carolina slate belt," the rock consisting of somewhat argillaceous slates interseamed with thin layers of quartz. The true nature of these rocks is only to be determined by megascopic examination. In a few specimens studied by the writer it has proved to be an altered igneous rock. The original nature of the rock is, however, of minor importance; it is now a slate or a schist. The gold occurs occasionally in free particles, but is mostly in fine coatings lying along the cleavage planes of the slates and in the iron pyrite which occurs in them. The small percentage of coarse gold which the ore contains is, of course, readily saved by simple amalgamation. The fine gold, however, is saved with much difficulty, because of the slimy nature of the crushed ore, the argillaceous material forming a coating of slime on the plates and preventing contact of the gold with the quicksilver. This difficulty is much greater where the slates are graphitic, as the carbonaceous matter "sickens" the quicksilver and prevents amalgamation. A further difficulty is that the fine, flaky character of the gold prevents successful concentration, as the gold particles float off in the slime. This has been the experience in all the mills, the records showing that in an ore assaying from $3 to $4 barely 30 per cent. of the assay value has been saved. It is true that in the Thies process ores assaying as low as $2.75 per ton have been successfully handled with an extraction of but from 75 to 80 per cent. This is, of course, largely because of the extremely low price of supplies and labor. The slimy character of the ore has prevented its treatment in bulk by chlorination and experiments made in cyaniding have generally been failures for the same reason.

Cyaniding Experiments.—Attempts to handle the ores with cyanide have thus far proved unsuccessful because of the slimy nature of the material treated, and secondly, the failure to first free the gold in the sulphurets from its pyritic envelope. In the past two or three years much successful work has been done in the treatment of slimy tailings by cyanide solutions. The work of various millmen for the past 5 years upon the slimy tailings of Rocky Mountain mills has proven that successful cyanide work can be done on such classes of pulp. It is, however, necessary to bear in mind that the Carolina ore carried only a part of its value in free gold, the remainder being in the pyrite scattered through the ore. For this reason it is necessary that the gold must be freed by roasting, whereas the cyanide experiments so far made have endeavored to treat the ore in its crude condition. At the Franklin Mine in Georgia, where the chlorination process was successfully used for a short while, previous experiments with cyanide were only successful on the oxidized tailings. An extraction of about 60 per cent. is as good as can possibly be expected with the general run of material when it is treated raw. The experiments made at Gold Hill, North Carolina, yielded about this percentage, and the experiments of Philip Argall on the ore from the Dixie Mine, South Carolina, showed an extraction of 62½ per cent. If, however, the pulverized ore, or tailings, are roasted before cyanidation is attempted an extraction of 90 per cent. or more can be depended on, even for ores assaying as low as $3 to $5 per ton.

In regard to the cost of roasting, the only figures available are those of Mr. Thies, and it is evident from a perusal of his figures that the cost per ton can be considerably reduced by the use of McDougall or Herreshoff roasters. In Montana, where labor is higher and fuel is at least double what it is in the South, the cost for this character of work would not exceed 60c. per ton. Using the improved machinery now in use throughout the West and having the advantage of the low prices prevailing in the South, the cost should not exceed 50c. per ton.

In reports by many eminent mining engineers, made during the past 20 years, the gold deposits of the South have been quite conclusively shown to contain an abundance of low-grade ore. The question has not been the amount of ore, but as to the economy of treatment. Within a radius of 20 miles of Salisbury, North Carolina, there are at least two dozen mines of unquestioned merit, not one of which is in active operation to-day. The famous Gold Hill mines would not be operated were it not for the copper contents which they carry. It is quite evident then that the field is a large one, and a promising one for the introduction of a cheap process. The success of the chlorination process of Mr. Thies gives assurance that the cyanide process when adapted to these ores will be equally successful, and as it is relatively cheaper there is no question as to a choice between the two methods; the cost of dead roasting will be the same in both cases. The cyanide plant, however, will, it is believed, cost less to build, less to operate, and the cost for chemicals will be less. If the ores contain oxides or carbonates of copper, chlorination may be necessary. Where the copper occurs as a sulphide there is no reason why the cyanide process cannot be used. The successful plants that have treated the ores by chlorination recovered on a $4 ore, $1.30 on the plates, $1.80 in concentrates, and the tailings carry 90c. The concentrates treated by chlorination yielded an extraction of 94 per cent., so that the total extraction of the assay value of the ore is only 75 per cent.

In order to treat such ores economically a plant should have a capacity of not less than 50 tons per day. A roaster to successfully handle that amount of ore per day will cost not less than $10,000 when erected and ready to run; the necessary cyanide vats, agitators, etc., will cost in the neighborhood of $1,000 or $2,000 more, and a working fund of $10,000 should be allowed for mine development.

Judging by the treatment of the slimy ores in various mills in Montana, I should say that the cost of mining and milling these ores should not exceed $2 per ton; of course, tailings could be treated much cheaper. A prominent cyanide man, after visiting the Howie Mine and other deposits in North Carolina and Georgia, wrote, "that he knows of no more promising field in the United States for the extension of the cyanide process; that it possesses so many decided advantages over other sections that those who now take advantage of the situation and the low valuation at which the properties are held are certain to be richly rewarded. With the selection of a property worthy of a good plant and the exercise of the same business prudence and sagacity in operating it that would be needed in other lines of industry, one is certain to be remunerated to an extent far beyond what one could hope for from any other mercantile investment."

IRON SANDS OF GUADELOUPE.—United States Consul Aymé, of Guadeloupe, under date of August 13th, 1901, reports that, according to a decree recently published in the "Journal Officiel," a concession for the exploitation of the iron sands of the colony has been granted to Mr. N. de La Roncière, merchant and president of the chamber of commerce of Pointe a Pitre. The consul adds: "These sands are found at many places along the coast in vast beds. The quantity in sight and immediately available is estimated at some 200,000 tons. It is a very pure magnetic iron sand, free from impurities, and yielding about 67 per cent. of iron. This iron is said to give a superior quality of steel. This consulate has been in receipt of several letters asking for particulars regarding these iron-sand deposits, but it has heretofore been the policy of the government of the colony to forbid the working of them. Practically unlimited quantities can be furnished, and vessels can be loaded very speedily and safely. All persons interested should write, either in English or French, to Mr. Numa de La Roncière, Pointe a Pitre, Guadeloupe, or to the American Exchange, same city."

WORKING HOURS IN AUSTRIAN MINES.—The length of shift in Austrian mines was first regulated by law in 1884, when it was found that the very different conditions under which mine working is carried on in that country did not permit of applying a hard and fast line provided the maximum limits be very large, so that the law of that year limited the shift to 12 hours and the duration of actual work to 10 hours. Since that period, says the London "Colliery Guardian," a 10-hour shift has been adopted in some districts, and one of 8 hours, not including the going down and coming up, in others; so that at the present time, in a great many Austrian mines, the length of shift is less than that established by law; but, on the other hand, in other mines a 12-hour shift obtains. With the object of diminishing the length of the shift, the Minister of the Interior proceeded in 1897 to conduct an inquiry into the conditions of working, submitting in 1898 the matter to the mines section of the Council of Industry and Agriculture, which, however, in the following year, reported against any limitations of the length of shift. These remarks are contained in the preamble of a bill that has been passed by the chamber as to a 9-hour day in collieries, the Ostrau-Karwin strike, which extended to all the mines in Bohemia, having induced Parliament to appoint a sub-committee, which limited the length of shift, but only in collieries and for underground hands. In accordance with this view the Government brought in a bill on May 17th, 1900, and in the following month the Political Economy Commission reported in favor of the measure with slight modifications. This year, however, the Government maintained its original text, and in adopting a 9-hour shift it considers that derogations should be permitted when necessitated on technical or economical grounds.

GAS ENGINES AT AN IRON MINE.—Instead of a winding shaft at the iron ore mine of Charles and Jules Collart, in the Grand Duchy of Luxemburg, there are adits dipping 1 in 20 to 1 in 25; and the winding engine is an Otto poor-gas motor. The generating station consists of two distinct parts, the gas-producer house and the engine room, between which is a gasometer. The former comprises (1) two 200-H. P. producers that can be fed with coke or anthracite; (2) a small multitubular boiler of 5 square meters heating surface, with superheaters, producing steam at 75 lbs. The steam, blown by an injector that also draws in air under the producer grate, traverses the incandescent fuel and produces a poor gas, chiefly composed of 23 per cent. carbonic oxide and 17 per cent. of hydrogen, and having a calorific power of 1,100 to 1,400 calories per cubic meter, as coke or anthracite is employed. After heating the air for combustion, and passing through scrubbers and purifiers and also the gasometer, the poor gas reaches the motor at a pressure of about 40 mm. of water; and this process affords from 4 to 5 cubic meters of gas per kilogramme of fuel, at an expenditure per horse power per hour of 0.5 to 0.6 kilogramme, of which 10 to 15 per cent. are consumed for firing the boiler. The heat contained in the coal and thus transformed into useful work may be put at from 25 to 30 per cent. In the engine room there are two two-cylinder Otto motors, each giving out 125-H. P. in normal working; and they work directly on to Lahmeyer continuous-current dynamos making 190 revolutions per minute, the motors being started by means of compressed air. The 500 to 550-volt current generated by the dynamos serves for lighting, ventilating the workings, taking off the water and haulage, this latter being effected by two small 24-H. P. electric locomotives, while the water is raised by 5 centrifugal pumps worked directly by electromotors.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

LIABILITY OF CORPORATION FOR TRANSFER OF STOCK.—A corporation record and certificate of ownership of stock by A. B., trustee, is notice to the company that he holds it, without the power of disposition, for another, and hence it is actionable negligence for the company to transfer the stock and cancel the certificate on the signature of the trustee to the assignment, without any inquiry for the real owner, or for his assent to the transfer.—Geyser Gold Mining Company vs. Stark (106 Federal Reporter, 558); United States Circuit Court of Appeals (Utah).

ROYALTIES OBTAINED BY SUIT IN EQUITY.—Where the rent or royalty reserved in the leasing of mineral property is dependent on the amount of mineral taken, a bill in equity will lie to compel an accounting by the operators or lessees of the mine. Where parties, owing to their acting in different capacities, must be placed in the position of suing themselves, the suit cannot be maintained at law, though it may be done in equity, which alone can afford a remedy in such cases.—Swearingen v. Steers (38 Southeastern Reporter, 510); Supreme Court of West Virginia.

VALIDITY OF CONTRACT BETWEEN MINER AND STOREKEEPER.—A contract between the employee of a coal company and a store company, made when he is in such employ, stipulating that the store company may take his future wages and apply them to his store account, is valid. But the wages of a minor child cannot be held by the employer for the debts of the father without the minor's consent, unless the contract between the employer and the father expressly stipulates for such application.—Berresford vs. Susquehanna Coal Company (10 Pennsylvania District Reports 243); Common Pleas Court of Pennsylvania.

LIABILITY ON NOTES OF MINING COMPANY.—Where a note of a company is signed by the proper officers and sealed with the seal of the corporation, it is prima facie evidence of the authority of the officers and of its due execution by them. Under the laws of California (Civil Code, Section 2307) declaring that authority may be conferred by a subsequent ratification, a corporation retaining the consideration of a note is liable for same, although at the meeting at which it was authorized a director was not present or notified; it appearing that he and the other directors owned all the stock, and that he must have subsequently had notice of the transaction.—Mills v. Boyle Mining Company (64 Pacific Reporter, 122); Supreme Court of California.

COMPANY MAY LEASE LANDS NOT REQUIRED BY ITS CHARTER POWERS.—The laws of Tennessee (1887, chapter 198), entitled an act to empower corporations to lease and dispose of their property and franchises, and by its terms applying to all corporation now or hereafter existing under the laws of the State, and requiring leases only to be made by vote of the majority of its stockholders at a meeting of which 60 days' notice had been published, etc., did not render void a lease of 2,800 acres of land by a coal company owning 75,000 acres, only 16,000 of which were covered by other leases.—Coal Creek Mining & Manufacturing Company v. Tennessee Coal, Iron & Railroad Company (62 Southwestern Reporter, 162); Supreme Court of Tennessee.

WHEN SECRETARY AND OTHER OFFICER ACT WITHOUT AUTHORITY.—Where the secretary and treasurer of a corporation, without any authority from or knowledge of the directors, agreed to pay certain parties a commission for the sale of its mining property and a sale was effected to a purchaser secured by the assignee of such parties, into whose hands the property had been turned, such sale and the fact that the president, who had the general management of its affairs, joined in the petition to the court for the sale, were not a ratification of the contract for commissions, as the sale was not made with the knowledge of the unauthorized act of the secretary and treasurer.—Extension Gold Mining & Milling Company v. Skinner (64 Pacific Reporter, 198); Supreme Court of Colorado.

ACTION OF DIRECTORS UNASSAILABLE WHEN RATIFIED BY STOCKHOLDERS.—Four of the five directors of a mining company which owned a claim conflicting with several senior locations concerning which there were suits pending, for the purpose of ending the litigation, and improving the company financially, individually purchased such conflicting claims. The following day at the meeting of the directors, when all were present, a resolution was unanimously adopted providing for the purchase of such property from the directors and issuing to them 704,000 shares of stock for same. The stock so issued had been originally issued as fully paid up, and returned by the holders to the treasury to buy property and for other purposes, and was taken by the directors at 12½c. per share. Subsequently, after the directors had paid their obligations incurred in the purchase of the property, and the stock, by reason of the transaction, became of greater value than when they took it, they notified each of the shareholders that they might share in the stock on payment of 12½c. per share, which was accepted by all the stockholders except one director, who had originally moved that the stock be issued to the directors in payment of the property bought by them. The court held that the transaction with the directors was unassailable, since the stockholders had completely ratified it.—Mackey v. Burns (64 Pacific Reporter, 485); Court of Appeals of Colorado.

NEW JERSEY LAW REGARDING ISSUANCE OF STOCK FOR PROPERTTY.—Under the laws of New Jersey (Public Laws 1896, page 293) providing that any corporation formed under such act may purchase property necessary for its business and issue stock to the amount of the value in payment of same, when an original issue of stock for property to be purchased is contemplated, it is the directors' duty to see that the real value of the property is at least equal to the face value of the stock. Before an original issue of corporate stock for property to be purchased takes place the bona fide judgment of the directors as to the value of the property, while it is entitled to considerable weight, is not conclusive, but may be reviewed at the instance of existing stockholders; and, if on review by a court of equity, the value of the property appears to be less than the face value of the stock, the issue should be restrained.—Donald v. American Smelting and Refining Company (48 Atlantic Reporter, 1116); Supreme Court of New Jersey.

After stock has been issued as full-paid stock for property purchased, the judgment of the directors as to the value of the property becomes conclusive, in the absence of actual fraud in the transaction, and such stock is not liable to any further call.—Donald v. American Smelting and Refining Company (48 Atlantic Reporter, 1116); Supreme Court of New Jersey.

ABSTRACTS OF OFFICIAL REPORTS.

El Oro Mining and Railway Company, Limited, Mexico.

The second annual report, which covers the year ending June 30th, 1901, shows a net profit for the year of £152,645. To this is added £54,217 carried over from the previous year, making a total of £206,862. Out of this was paid for dividend No. 1 and for income tax for 1900 a total of £48,511, and for dividend No. 2 £47,500; £11,000 were written off on account of an option on Somera No. 1, and £20,000 for depreciation of plant, leaving a balance of £79,850 carried forward.

The 100-stamp mill and cyaniding plant are now in full working order, and the works have now a capacity of 9,340 tons per month.

The authorized capital of the company is £1,000,000, of which £980,000 have been issued. The balance of £20,000 is held in reserve.

Since the general manager's report for the preceding year, which showed an estimated reserve of 346,989 tons of ore, a further reserve of 173,156 tons has been developed. During the last year 75,345 tons have been extracted and treated, leaving 444,800 tons in sight. The average gross value of the ore treated during the year was $17.96 in gold and silver, of which $13.88 has been recovered. The total working expenses, including mining, milling, development and general expenses, amounted to $6.44. The recovery was 77.3 per cent. of the gross value.

The profit and loss account for the year ending June 30th, 1901, shows, in sterling, as reported from the London office: Bullion recovered, £250,663; railroad receipts, £31,392; miscellaneous profits, £6,633; total, £288,688. The charges are stated as follows: Mining expenses, £116,744; railroad expenses, £14,711; Somera option sinking fund, £11,444; depreciation, £20,000; interest, exchange and London expenses, £4,558; total, £167,043, leaving a balance of £121,645. From this dividends amounting to £47,500, as stated above, were paid, leaving a balance of £74,145 to surplus account.

The mill returns show that 70,446 tons of dry ore were treated during the year, and bullion to the value of $208,164 was recovered from the plates. This represented 16.45 per cent. of the value of the ore and 21.3 per cent. of the total value recovered. The average milling cost was 97c. per ton. The record by months was as follows:

Month. 1900.	Tons crushed.	Assay value ore. Gold.	Assay value ore. Silver.	Total value Ore.	Total value bullion.	Extraction per cent.	Per cent. total bullion recovered.
October	6,251	$16.97	$2.01	$118,644	$21,401	18.0	24.8
November	6,025	16.56	2.01	111,884	20,548	18.0	23.5
December	6,430	16.24	1.85	116,319	19,997	17.0	22.5
1901.							
January	6,213	16.21	1.92	112,642	20,615	18.3	22.7
February	6,130	16.43	2.03	113,160	21,640	19.1	23.7
March	6,044	15.11	1.85	102,506	20,919	20.4	24.2
April	7,676	15.49	2.00	134,253	23,333	17.0	24.4
May	8,315	16.13	2.07	151,333	18,247	12.0	15.9
June	8,639	15.29	1.70	146,776	18,824	12.8	16.9
July	8,723	16.43	1.69	158,061	22,639	14.3	18.0

Extensions to the cyanide plant were completed in April, 1901, the results of which are shown in the increased amount of ore treated in that month and in May, June and July. The total amount of bullion extracted in the cyanide plant was $770,158, of which $732,510 was in gold and $37,648 in silver. The record by months was as follows:

Month. 1900.	Tons treated.	Assay value per ton. Gold.	Assay value per ton. Silver.	Total assay value of sands and slimes treated.	Total value of bullion recovered.	Total extraction gold and silver, per cent.	Ratio cyanide yield to total yield, per cent.
October	6,251	$13.01	$1.84	$92,829	$56,065	70.0	75.2
November	6,025	13.50	1.94	93,073	66,896	71.0	76.5
December	6,430	12.60	1.74	92,219	68,647	74.4	77.5
1901.							
January	6,213	12.62	1.83	89,763	70,268	78.3	77.3
February	6,130	12.85	1.94	90,645	69,544	76.7	76.3
March	6,044	11.78	1.76	81,802	65,387	79.9	75.8
April	7,676	11.58	1.90	103,465	72,373	69.9	75.6
May	8,315	12.41	1.88	118,846	96,548	81.2	84.1
June	8,639	12.65	1.70	123,918	92,596	74.7	83.1
July	8,723	13.98	1.66	136,394	102,834	75.4	82.0

The total costs for the year's operations are reported at $453,950, exclusive of construction account, which amounted to $93,037. The expenses were distributed as follows:

	Total.	Per ton.
Mining	$157,395	$2.23
Development work	64,509	0.92
Milling	68,744	0.97
Cyaniding	84,494	1.20
General expenses	78,808	1.12
Total	$453,950	$6.44

The total value of the bullion recovered and set against these expenses was $978,322.

BOOKS RECEIVED.

In sending books for notices, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review in a subsequent issue of the Journal.

"Financial Annual of Japan." No. 1. Tokyo, Japan; issued by the Imperial Department of Finance. Pages, 74.

"Bulletin of the United States Fish Commissioner." Volume XIX., for 1899. George M. Bowers, Commissioner. Washington; Government Printing Office. Pages, 504; illustrated.

"Report of the Commissioner of Education of the United States for the Year 1899-1900." Volume I. Dr. William T. Harris, Commissioner. Washington; Government Printing Office. Pages, 1,280.

"The Production of Cement in 1900." Extract from "Mineral Resources of the United States." By S. B. Newberry, Uriah Cummings and E. C. Eckel. Washington; Government Printing Office. Pages, 22.

"The High Plains and Their Utilization." By Willard D. Johnson. Extract from the "Twenty-first Annual Report" of the United States Geological Survey. Washington; Government Printing Office. Pages, 164; with maps and illustrations.

"Contributions to Mineralogy and Petrography from the Laboratories of the Sheffield Scientific School of Yale University." By S. L. Penfield and L. V. Pirsson. New York; Charles Scribner's Sons. London; Edward Arnold. Pages, 496; illustrated. Price, $4.

"Preliminary Description of the Geology and Water Resources of the Southern Half of the Black Hills and Adjoining Regions in South Dakota and Wyoming." By Nelson Horatio Darton. Extract from the "Twenty-first Annual Report" of the United States Geological Survey. Washington; Government Printing Office. Pages, 104; with maps and illustrations.

"United States Geological Survey." Extracts from "Mineral Resources of the United States for the Calendar Year 1900." Edward Parker, "The Production of Sulphur and Pyrite in 1900," and "The Production of Coal in 1900." F. H. Oliphant, "The Production of Petroleum in 1900." Jefferson Middleton, "Statistics of the Clay-Working Industries in the United States in 1899 and 1900." "The Production of Platinum, Quicksilver, Lithium, Nickel and Cobalt in 1900." Washington, D. C.; Government Printing Office. Pamphlets.

NEW PUBLICATIONS.

"The Relation of the Subsiding Basin to Water Purification and Information Relating to Water Clarification." By Wynkoop Kiersted. Kansas City, Mo.; published by the author. Pages, 32; illustrated.

This is a paper on a topic which has now come to be recognized as a very important one in all systems of water supply. The author has treated the subject very carefully, and illustrated it from actual practice. It is a monograph which will interest all engineers who have to design water supply systems, large or small.

"On the Crystalline Structure of Some Nuggets." By Dr. A. Liversidge. Sydney, N. S. W.; reprinted from the "Journal" of the Royal Society. Pamphlet; pages, 12; with 7 plates.

Dr. Liversidge, as is well known, has made a special study of the structure and other peculiarities of nuggets, and has brought out many interesting points in relation to their occurrence. The present pamphlet contains studies, first, on some silver and copper nuggets from the Lake Superior region, Bolivia and South Australia; and second, on some gold nuggets from Victoria, New Zealand and the Klondike. The plates give excellent illustrations of the nuggets studied, reproduced from photographs.

"Statistical Summary of the Empire of Japan. 34th Year of Meiji (1901)." Prepared by the General Statistical Bureau of the Imperial Cabinet. Tokyo, Japan; Imperial Printing Office. Pages, 150; with diagrams.

The Japanese Government has taken especial interest in statistical work, and its reports have taken high rank among similar publications for the care with which they are prepared and the excellence of their arrangement. The present volume is a general summary of the detailed reports and gives in a small space a great variety of statistics relating to the territory and population of Japan, its population, industries, commerce, transportation and navigation. There are also statistics in relation to administration, instruction, justice and police, health and sanitation. Mr. N. Hanabasa, the director of the Statistical Bureau, has shown much skill in compressing this variety of information into so short a space. The tables relating to the mining industry show an important production of the leading metals and minerals, the figures for which we have heretofore given.

"Nineteenth Annual Coal Report of the Illinois Bureau of Labor Statistics. 1900." David Ross, Secretary of Bureau. Springfield, Ill.; State Printers. Pages, 328.

This report is in the usual form, giving statistics of the production of coal in Illinois; of the labor employed; of mine accidents; with other particulars affecting the condition of the mines, the operators and the miners. The output of coal in the State in 1900 reached the largest total ever reported, 25,153,929 tons, in the production of which nearly 40,000 men were employed. There were 920 mines and openings, of which 580 were shipping mines and 340 small operations providing coal only for local trade. There was—as in several other coal-mining States—an increase in the number of accidents last year; which seems to have been due in part to the opening of new mines and to the employment of new men as one result of the increased demand. The reports of the district mine inspectors go very fully into these accidents and their causes.

An interesting feature is the quantity of coal mined by machine last year; about 23 per cent. of the coal produced in the State was mined in this way, and the number of mines in which machines were used showed an increase. Another feature in the report was the increase in working time shown, which was, of course, due to the increased demand for coal.

"The Iron Ore Deposits of New South Wales." Prepared for the Geological Survey of New South Wales by J. B. Jaquet. Sydney, N. S. W.; Government Printer. Pages, 188; illustrated.

Although coal and gold mining have been most successful and prosperous industries in Australia, little has been done in the working or utilization of iron ores, and the country is still dependent upon imports for its supplies of iron and steel. The existence of iron ores in New South Wales was proved 50 years ago, and it is nearly that time since the first attempt to smelt such ores was made at Mittagong. That this undertaking and others of a later date were failures, was not due to any defects in the ore supply or its quality. The cost of transportation, labor and supplies was too high to enable the colonial iron-master to compete with imported iron. The importance of an iron supply in Australia has been fully recognized, and the question of establishing the iron industry has been discussed for years past, but so far without any satisfactory results.

As one consequence of the discussion the Geological Survey of New South Wales undertook the work of surveying and examining all the deposits of iron ore known or reported to exist, especially those which appeared to be favorably located with respect to supplies of coal, limestone and other necessaries. The result of this work is found in the present volume. After a general introduction, the report considers in detail a number of iron-ore deposits, to which attention was drawn. Their extent, composition, probable economic value and possible utilization have all been carefully studied. A great body of information, much of which is new, has been collected, and is here presented. It is not claimed that the iron resources of the State are fully presented, for no notice is included of the iron ores of the far western districts, where large deposits are believed to exist, but which are too remote from fuel or transportation to receive present consideration.

The conclusion reached is that there are supplies of iron ore in New South Wales sufficient for an industry of large proportions. Its establishment depends entirely upon financial and economic considerations. The ores include red and brown hematites, magnetite and carbonate, to say nothing of the titaniferous ores of the Kaurah River; and many analyses are given, showing their quality and probable value.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.

Letters should be addressed to the MANAGING EDITOR.

We do not hold ourselves responsible for the opinions expressed by correspondents.

A Massachusetts Prospect.

Sir: At Sheldonville, Mass., development work is being done on a well defined quartz vein, carrying values in gold, silver and copper. A vertical shaft, started August 6th, has been sunk 94 ft. and cross-cutting began October 7th. The shaft is 12 by 6 ft., and is in massive granitic rock. Hoisting has been accomplished by bucket and derrick. Very little water has been found. Work is carried on day and night. Drilling and hoisting have been done by steam since August 29th. It is proposed to drift and upraise on the vein, which should be cut before November 1st.

This latest attempt to discover if Massachusetts has a permanent mineral vein is being made with a full knowledge of the past mineral history of New England. It differs from the majority of the earlier experiments in being intelligently, efficiently and economically conducted. This fact, and the undoubted richness of ore obtained from a former prospect shaft and cut, are known to many persons experienced in mining matters. It is conceded by all these persons that the well-explored prospect is unique and worthy of the development now being done.

J.

Wrentham, Mass., Oct. 11, 1901.

A corespondent at Lima, Peru, has written to this office ordering Nos. 21 to 26 of Vol. LXIX. and No. 19 of Vol. LXXI. of "The Engineering and Mining Journal." We shall be obliged if the writer will communicate with us again, as the above letter was unsigned.—Ed. E. & M. J.

QUESTIONS AND ANSWERS.

(Queries should relate to matters within our special province, such as mining, metallurgy, chemistry, geology, etc.; preference will be given to topics which seem to be of interest to others besides the inquirer. We cannot give professional advice, which should be obtained from a consulting expert. Nor can we give advice about mining companies or mining stock Brief replies to questions will be welcomed from correspondents. While names will not be published, all inquirers must send their names and addresses. Preference will, of course, always be given to questions submitted by subscribers.

Books referred to in this column can be obtained from the Book Department of the Engineering and Mining Journal.)

Electro-peroxygen Process.—Where can I obtain particulars respecting the electro-peroxygen process of extracting precious metals from their ores?—J. A. S.

Answer.—Particulars in relation to the process named are not at hand. Can any of our readers supply the information desired in this case?

Analyses Potters' Clay.—I should like to have a copy of an analysis of clay suitable for potters' use. Is there any book printed on the potter's trade, giving analyses of clays, etc.?

Answer.—Langenbeck's "Chemistry of Pottery" is suggested as containing the information you desire. The volume may be purchased of the book department of the "Engineering and Mining Journal." Price, $2; postpaid.

Acid-Proof Cement.—Is there any standard preparation protecting the inside of an iron pipe column from the action of acid water pumped through it, or can you give us the formula for the preparation of such a coating? We have heard there is such an article used, but do not know what it is nor the method of application.—Alma.

Answer.—We do not have in mind any such standard preparation. Would be glad to be advised by any of our readers who are using a cement of this kind.

Magnesian Limestone.—Where can I find a limestone containing a higher percentage of magnesia than that shown in the following analsis, viz.: $CaCO_3$, 53.68; $MgCO_3$, 45.38; Al_2O_3, 0.61; Fe_2O_3, 0.11; silica, 0.32?—W. A. F.

Answer.—The theoretical composition of dolomite contains 45.65 per cent. $MgCO_3$, so your analysis shows a nearly pure magnesian limestone. What you are after is probably magnesite, which is of rather rare occurrence in the United States. A small amount (2,000 tons) was produced in the southern part of California last year. It has been reported from other localities, but not in commercial quantities.

Thermit.—Can you put me in communication with the American manufacturers of "thermit" for the production of intense heat, or with agents of the manufacturers?—B. B.

Answer.—Thermit—which was fully described in the "Engineering and Mining Journal" August 25th, 1900—is the invention of Dr. Hans Goldschmidt, of Essen-Ruhr, Germany. His product and processes have been patented in this country, but we do not know of any agent or manufacturer in the United States. The manufacturers in Europe are the Chemische Thermo-Industrie, Essen, Germany, and the Societé d'Electro-Chemie, St. Michel de Maurienne, France.

Treatment of Complex Ores.—Can you inform us of any practical process for treating an ore containing about the following constituents: Tin, 10 per cent.; copper, 12 per cent.; lead, 15 per cent.; arsenic, 7 per cent.; silver, 70 to 85 oz.; gold, traces? Of course, it is easy to utilize the copper and silver if the tin is ignored, or to utilize the tin if the copper is ignored, but we wish to know of a process by which the value of the tin, copper and silver at least can be saved.—J. R. & Co.

Answer.—In the "Mineral Industry," Vol. VIII., a description is given of a plant in Tostedt, Germany, where some complicated tin ores from Bolivia are successfully treated, but in this case the tin only appears to be saved. We should be pleased to hear of a method treating these ores whereby the other metals named may be secured.

Gas from Lignite for Power.—In the "Enginering and Mining Journal," July 6th last, you quote from the London "Colliery Guardian" in an article entitled "Gas from Lignite for Power." I have looked over the files of the "Colliery Guardian," but have been unable to find the article referred to. Will you kindly give me the exact reference to the article in question? Also, if you can refer me to any other source of information concerning the use of gas from lignite in gas engines I shall be greatly obliged to you.—E. C. M.

Answer.—Upon reference, we find that the article in question was a brief note, condensed from some German paper not named. We advise you to write to the German firm named in the paragraph—the Werschen-Weissenfelser Braunkohlen Actiengesellschaft at Halle-an-der-Saale, Germany.

For information as to gas engines and the making of gas from lignite or poor coal, we might suggest Hiscox's "Gasoline and Oil Engines," price $2.50; or, if a more elaborate work is wanted, Donkin's "Gas, Oil and Air Engines," price $7. Also Butterfield's "Chemistry of Gas Manufacture," price $3.

Treating Concentrates.—We have a property in which we intend concentrating our values, and our concentrates will be very rich. We yesterday received advice from the party who is putting in the concentrators as follows: "These (the re-concentrates) I would ship direct to Lewis & Sons, Swansea, Wales, and get the full value for all the values contained therein, less a very reasonable cost of working, less than half the cost of same for inferior work in our own country." Will you kindly let us know in your column of "Questions and Answers" whether it is not possible to get just as good results in this country as in Swansea.—J. S.

Answer.—While the firm of Lewis & Sons is an old and well-known one, against whom nothing is to be said, we believe your adviser is entirely mistaken in saying that you must ship to Swansea to secure proper treatment. Our American smelters and refiners now hold a leading position, as is acknowledged all over the world; and is proved by the fact that they are receiving and treating concentrates, mattes and other material in large quantities from Mexico, Peru, Chile, Tasmania and other countries. We believe that you can do far better in the United States than abroad; and we advise you to correspond with some of the well-known smelting concerns, whose addresses you will find in our advertising columns.

Arsenic and Spodumene.—1. Can you give me statistics covering the consumption of red and white arsenic for recent years? Also the chief uses of red arsenic? 2. What quantities of spodumene are consumed annually? Who are the principal buyers in the United States? Is the material worked up into lithium salts in this country or in Europe, and by whom?—E. A. F.

Answer.—The consumption of arsenic, including metallic arsenic and arsenical compounds, in the United States, may be taken as equal to the imports, which amounted in 1900 to 5,765,559 lbs., valued at $265,500, and in 1899 to 9,040,871 lbs., valued at $386,791. There are no statistics as to the relative amounts of the different compounds of arsenic included in these figures, as the U. S. Treasury Department does not separate them in its reports. It may safely be assumed, however, that the greater part is white arsenic, this being the usual form in which arsenic appears on the market. All of the supplies for the United States come from England and Germany, except a very small amount that is imported from Canada. The chief use of red arsenic is in the preparation of colors. We are unable to give any figures as to the amount of spodumene consumed in this country or abroad. The output of the mines in South Dakota, which are the only sources of the mineral in this country, is not large and probably does not exceed two or three hundred tons per year, and may fall far short of that figure.

MINERAL COLLECTORS' AND PROSPECTORS' COLUMN.

(We shall be pleased to receive specimens of ores and minerals, and to describe and classify them, as far as possible. We shall be pleased to receive descriptions of minerals and correspondence relating to them. Photographs of unusual specimens, crystals, nuggets and the like will be reproduced whenever possible. Specimens should be of moderate size, and should be sent prepaid. We cannot undertake to return them. If analyses are wanted, we will turn specimens over to a competent assayer, should our correspondent instruct us to do so, and send the necessary money.—Editor E. & M. J.)

437.—Supposed Kaolin.—C. J. G.—The sample of clay is not kaolin at all, neither has it the physical qualities of fuller's earth. Kaolin or china clay is pure white; its value depends on its freedom from iron or other impurities that would discolor the ware on baking. Best American kaolin is worth $9 per long ton f. o. b. New York. A deposit in Oregon would be of doubtful value at present unless of extra quality.

438.—Graphite.—G. A.—The specimen is a serecite schist containing a little graphite. In its crude state it is good for nothing and a ledge of such rock in British Columbia is of little, if any, value.

439.—Supposed Zinnwaldite.—T. J. B.—The dark green, almost black prismatic crystals in a quartz gangue have not the form of zinnwaldite, but are a mixture of chlorite and hornblende, the hornblende changing to chlorite.

440.—Barite.—L. A. W., Mexico.—The soft, clear, well-defined crystals are probably barite, though the crystalline form is unusual.

441.—Gold Ore from Oregon.—H. K. N.—So far as can be judged from the specimens, your vein material is a friction breccia. The vein matter does not resemble a conglomerate, but rather broken and crushed rock more or less decomposed by mineralized water. The red rock is apparently a leached igneous rock. It is so much altered that its original composition cannot be determined from the specimen. The pink mineral is cinnabar, sulphide of mercury.

A HANDSOME EXHIBIT AT BUFFALO.

One of the handsomest and most complete exhibits at the Pan-American Exposition is that of the Lunkenheimer Company. This is installed in Section 46 in the Machinery and Transportation Building. Visitors to the Exposition who are interested in a line of superior brass and iron steam specialties and engineering appliances should not fail to visit this exhibit. Mr. F. L. Swanberg is in charge. Here can be seen a complete line of regrinding valves, handy valves, lever throttle valves, pop safety valves, plain whistles, chime whistles, fire alarm whistles, injectors, sight-feed lubricators, oil cups, grease cups, glass cups, glass body oil pumps and a complete line of brass valves and fittings in medium and extra heavy patterns. The Lunkenheimer specialties were awarded three highest medals at the Exposition Universelle, Paris, 1900. The headquarters of the Lunkenheimer Company are in Cincinnati and there are branches in New York and London.

GOOD SHAFT AND TUNNEL WORK.

An interesting feature of the operations of the Lackawanna Iron & Steel Company in the building of its blast furnace and steel plants at Stony Point, south of Buffalo, is the sinking of shafts and tunneling under the canal the company has dug to bring ore vessels up to its furnace yard docks. The tunnel is to convey gases from the coke ovens on the lake shore to the furnace plant for driving gas engines. It will also carry water and other pipes.

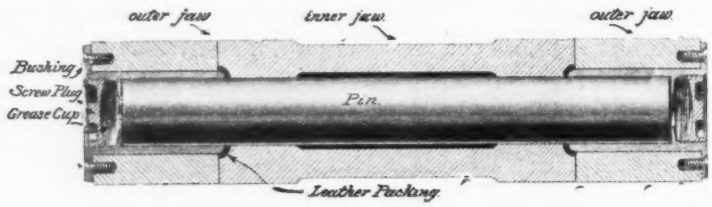
The shaft excavation was done under contract by Conrad Schroeder and Edmund A. Bartl. Actual work on the shaft was begun on May 1st; on May 20th it had been carried to a depth of 35 ft. in the east shaft, and on May 26th the west shaft had reached a depth of 37 ft. This was through soft material, and it was necessary to use 10 by 10 timbers closely placed. At the depths given rocks were reached and blasting was commenced, although the compressor had not arrived. Both shafts were sunk 15 ft., and on June 1st air was started through 3-in. pipe, and on July 20th both shafts were finished, the east one being carried down 60 ft. below the cribbing, and the west one 54 ft.

The tunnel was started and carried 387½ ft., making a total distance of 500 ft. driven in 48 days. After finishing the rock-work the tunnel was lined with brick and concreted between the brick wall and the rock. The shafts were treated in the same way. Throughout the work the hoisting was done with Mundy hoists and stiff-leg derricks. With the exception of two light injuries on the hands, nobody was hurt. The superintendent of the drilling and other work was an experienced shaft and timberman, James Judge, who drove a tunnel at Niagara Falls for the paper mill several years ago. Two Ingersoll-Sergeant D drills were used on each side. The compressor, also of Ingersoll-Sergeant make, required little attention and was never out of order. The drills could have been a little larger, but they filled the bill well. About 300,000 bricks and 1,100 yards of concrete were used, which was machine mixed. The work was finished September 14th, a few days ahead of contract time. The location of both shafts is only about 50 ft. from the Lake Erie shore, but through careful timbering all caves and rush of water were prevented.

THE LINK BELT COMPANY'S GOLD DREDGING MACHINERY.

Among the recent improvements in mining machinery which have been placed on the market, a bucket chain and a revolving screen for mining dredges, which have been brought out by the Link-Belt Machinery Company, of Chicago, deserve more notice. Those who are familiar with the requirements of this style of mining realize the necessity of having machinery that is heavy and powerful enough to cope with the unseen obstacles beneath the surface, protected as far as possible from undue wear, and with those parts which must of necessity be worn by the action of the sand and gravel in which they work easily renewable, so as to avoid as far as possible the delay and consequent loss of time and money due to shutting down for repairs. Gold dredging, to be profitable, must be made as nearly as possible a continuous operation. The somewhat frequent breakages in some machinery manufactured for this work have been a serious drawback in some cases.

The bucket chain is the design of Mr. G. L. Holmes, assistant engineer of the company, and patents have been taken out covering the essential features. Mr. Holmes has given much time to the study of this class of work and has designed a bucket chain having many desirable points. The articulations of the chain are absolutely grit-proof; the pins, which are large in diameter, are completely enclosed, there being no unprotected passage by which sand or other grit may enter the bearings. The joints are closed by packing rings of heavy pressed leather, so



Cross-section Through Articulation.

Fig. 1.—Pin and Bushing for Chain.

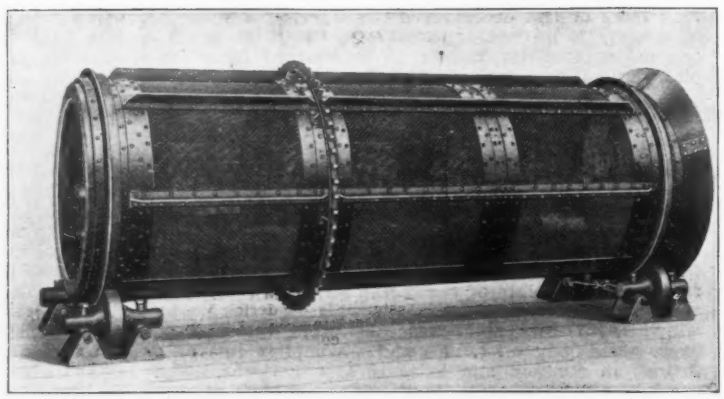


Fig. 3.— Screen.

Fig. 2—Chain and Bucket.

The Link Belt Company's Gold Dredging Machinery.

placed as to be able to exclude grit from the bearings and at the same time not be subject to excessive wear themselves. The pins are plain, straight bars of turned steel and require no forging or finish beyond cutting to the proper length and turning, and, in extreme cases, hardening. Contrary to the usual practice, the pins are made fast in the rear end of one link and turn in the outer or front jaws of the next one; each pin turns in two hardened steel bushings, one at either end, and, in case a pin should become so worn as to be considered in danger at a time when no extras were in stock for repairs, it could be replaced with a piece of shafting of the proper diameter and length with very little trouble. The bushings are of steel accurately machined to size and hardened; being made to gauge, they are interchangeable. The bearing surfaces are very smooth and are so hard as to resist abrasion to the greatest extent possible. Each bushing is provided with a receptacle for lubricant and a screw plug for forcing the grease into the bearings. The grease cups are so located that, while they are readily accessible, they are out of danger from falling rocks or the many other accidental happenings incidental to this class of work. The grease is forced through the bearings in a direction opposite to the only one by which grit might possibly enter in case the packing should become worn, thus serving to carry out any small particles that might have partially entered and keeping the bearing surfaces clean and well lubricated at all times. A further desirable feature is the fact that a bushing may be removed without entirely disconnecting the chain, facilitating repairs and making it possible to keep the chain in the best condition at all times, whereas in some dredge chains the fact that it is necessary to shut down for an indefinite time, and take the chain completely apart in order to renew a pin or bushing, causes the operator to wait as long as possible, perhaps until something gives way, before making the necessary repair. The connections are shown in Fig. 1. The links are made either of cast steel or malleable iron, as desired. The Link-Belt Company, from past experience extending over many years, and with chains for every conceivable purpose, elevating and conveying every sort of material, does not hesitate to recommend the malleable iron over the steel for the purpose intended. It also makes the buckets of the same material, as it is superior to sheet steel in point of resistance to corrosion and may be thickened and strengthened at such points as experience has proved to be necessary. The buckets are cast with a rib extending around from side to side immediately in the rear of the cutting lip, which serves not only to stiffen the bucket, but also acts as an abutment for the lip and relieves the rivets holding it of a large portion of the shear that would otherwise come upon them. The cutting lips are of forged steel with a hammer dressed edge, and are fastened to the bucket and link with large rivets closely placed. A good idea of the size and general proportion of one of these chains may be obtained from Fig. 2, which is from a photograph of a portion of a chain about 300 ft. long, which has recently been shipped to British Columbia.

The screen, which is also reproduced from a photograph in Fig. 3, is built with the same idea of quick and thorough repair; all parts subject to the wearing action of the gravel are of easy access and may be taken out and replaced without disturbing the balance of the screen. The bearings of the rollers on which it turns are of the dirt-protected type and the machine as a whole is strong and durable. It is built with a heavy steel frame to which two heavy turned steel tires and the driving sprocket are riveted. The screening surface, which may be of perforated plate or wire cloth, as desired, is made in panels of convenient size, bolted on; all bolt heads are flush with the inside of the screen and all parts that are not covered with the clamp plates holding the panels are provided with protecting plates so as to prevent the contact of the gravel with the main frame. The object of the designer was to construct the screen so that there would be a permanent frame which was not subject to extreme wear and which could always remain in place upon its trunnions, and to which the screening surface could be attached in such a manner that any portion could easily be removed when worn or when it was deemed desirable to change the mesh, with the least possible expense and delay. Of course, it is impossible to screen large quantities of gravel without considerable wear upon the screening surface, and in the ordinary revolving screen, which is commonly made of perforated plates rolled up and riveted together in courses like a boiler shell, when a portion becomes worn it is necessary to cut out the rivets and renew a whole course. A further interesting feature of the screen illustrated is the fact that a special grade of wire cloth is used for the screening surface in place of the perforated plate commonly used for gravel screens; this cloth, which is for fine screening, is made of 5/16-in. wire and is ⅜-in. mesh; it is very heavy and substantial, and is the largest diameter of wire that may be woven to this mesh.

PATENTS RELATING TO MINING AND METALLURGY.

UNITED STATES.

The following is a list of patents relating to mining and metallurgy and kindred subjects, issued by the United States Patent Office. A copy of the specifications of any of these will be mailed by the Engineering and Mining Journal upon receipt of 25 cents.

Week Ending October 1st, 1901.

683,470. ACETYLENE-GAS GENERATOR. Clarence A. King, Norwich, N. Y. Comprises a receptacle for the carbide, and concentric water-rings having apertures in adjacent faces for directing jets of water toward each other in contact with portions of the lower surface of the carbide.

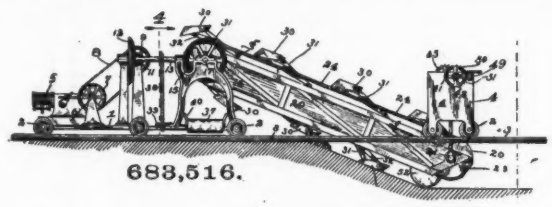
683,490. COMPOSITION FOR TEMPERING TOOL POINTS. Joseph F. Pflieger, Corning, Ohio. The composition consists of carbonate of potassium, nitrate of potash, soap and water.

683,504. CENTRIFUGAL LUBRICATOR. Franz Schneider, Hochst-on-the-Main, Germany. Comprises a suitable holder to be attached to a

rotating machine element, having an attaching shank with a bore opening into the holder, and a lubricant reservoir in the holder, closing the bore when at its inward position, movable outwardly in the holder by centrifugal force.

682,506. WATER-TUBE BOILER FURNACE. William W. Shilling, Sharon, Pa. In combination with the furnace wall, and the two sets of horizontally-arranged boiler heads connected by vertical stacks of tubes; of a central tier of brick built between the two stacks of tubes, and outside tiers of brick between each stack of tubes and the adjacent furnace wall, all of the tiers having vertical passages in the same, the passages in each tier being closed at the top of the latter, the central tier of brick extending above the top of the outside tiers, whereby the ascending gases will be first deflected inwardly through the spaces between the tubes of each stack and then outwardly through the spaces.

683,516. DREDGING MACHINE. Edward A. Stinson, Frankfort, Ind. The combination of a suitable framework, a main shaft mounted thereon, a motor whereby the main shaft is impelled, a frame mounted on the main shaft and having carrier and scoop guiding and con-

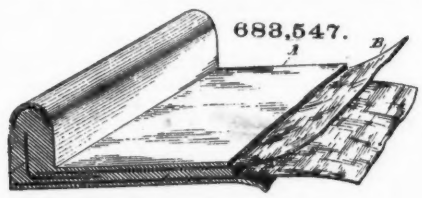


683,516.

trolling grooves therein, an endless carrier passing around the frame, scoops mounted on the endless carrier and provided with lever arms having gudgeons which engage with the grooves or ways in the carrier frame, switches at the entrance ports of certain of the grooves, and means for operating the switches.

683,533. ROCK DRILL. Wirt W. Waite, Colfax, Wash. The combination of a revoluble carrier, a hammer pivoted thereto and whirled thereby, the hammer having a tappet, and a fixed cam engaged by the tappet of the hammer.

683,542. PUMP. Charles C. Worthington, Dunfield, N. J. The combination with a pump cylinder, of suction and force valve plates arranged edgewise to the pump cylinder and extending longitudinally of the cylinder, a pulsation chamber between the plates, and suction and force chambers on opposite sides of the pulsation chamber.



683,547.

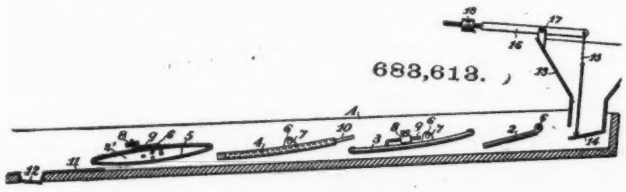
683,547. CONCENTRATING BELT. William F. Bowers, San Francisco, Cal. A concentrator belt having a body reinforced by straight textile material, side flanges and independent strips of textile material cut on the bias inserted in the side flanges.

683,555. ROD SUPPORTER FOR OIL WELLS. William E. Dodge, Roll, Ind. In combination, a threaded rod, slightly reduced at its upper end; a supplemental top attached to the end, the top having a square shank and a cap, the hinged coupling comprising the upper and lower members connected by means of a hinge pin, the bolt swiveled in the lower member and having a threaded socket at its lower end, the bolt having a collar and jam-nuts, the trunnion having a threaded hub working on the rod and the jam-nut for locking the trunnion upon the rod.

683,562. PROCESS OF PREPARING CALCIUM CARBIDE. Edward W. Lancaster, Westminster, England. A prepared carbide, consisting of calcic or other carbide, saturated, or partly saturated, with creosote.

683,580. METAL BATH. Frederick W. Taylor and Henry L. Gantt, South Bethlehem, Pa. Assignors to the Bethlehem Steel Company, same place. A pot adapted to contain melted metal, and means for heating it, in combination with a cooling device and means for inserting the cooling device in, and withdrawing it from, the pot at will.

683,603 and 683,604. CONVEYOR. Charles W. Hunt and Charles C. King, West New Brighton, N. Y. The combination of chains, each comprising links and pairs of rollers, the rollers of each pair being separated and the links arranged between them; a track for the rollers of each chain, and buckets carried between the chains and supported therefrom, the buckets forming the only connection between the chains.



683,613.

683,613. GOLD-SAVING APPARATUS. Alfred Marcotte, Gaston, Cal. The combination of a counterbalanced plate having a silvered or amalgamated lower surface, with means by which the plate is suspended between its opposite ends within the sluice, so that the current flowing therethrough will lift and float the plate upon it.

683,614. AIR COMPRESSOR. Charles R. Meston, St. Louis, Mo., assignor of one-half to the Emerson Electric Manufacturing Company, same place. The combination with a casing, of a rotary element therein provided with notches or recesses forming air chambers, the casing having inlet and discharge openings, and means for introducing liquid into the casing adjacent to the inlet opening.

683,626. FUEL, AND METHOD OF MAKING SAME. Emma O. Trusdell, Dixon, Ill. A fuel composed of garbage mixed and comminuted with ashes.

683,635. METHOD OF MANUFACTURING TILES. John F. Booraem, New York, N. Y., and Bernard Jacquart, South River, N. J. The method consists in forming a brick blank, then nearly severing the blank to form a thin tile portion, and a thick reinforcing refuse portion connected therewith, then drying and burning the blank, and finally separating the thin tile portion from the thick reinforcing refuse portion of the blank.

683,643. BURNING KILN FOR BRICKS. Jonathan F. B. Fiske, Newton, Mass. A kiln having a plurality of burning chambers, each having draft holes in the top, the chambers being separated by walls, fire-holes in the walls, and stopping devices capable of being manipulated from the outside through the draft holes for being placed in stopping position over the fire-holes, combined with a portable forced-draft apparatus for co-operating with the draft holes.

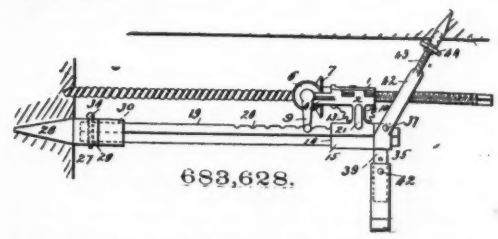
683,649. EXCAVATOR. George W. King, Marion, Ohio. Assignor to the Marion Steam Shovel Company, same place. A dipper provided with a body portion and a nose-piece, in combination with a separate protecting shield forming an extension of the body and covering the outer portion of the nose-piece.

683,705. ROTARY GAS ENGINE. James W. Plimpton, Oil City, Pa. A pair of housings connected together, auxiliary housings formed integral therewith, and provided with a longitudinal opening; a drive shaft, a drive wheel carried by the shaft and operating between the housings; explosion chambers formed in the rim of the wheel; a pair of feed cylinders mounted on the housing and connected to a suitable source of explosive supply; pistons arranged in the cylinders; gearing connecting the pistons of the cylinders to the drive shaft; ports connecting the feed cylinders with the explosion chambers in the drive wheel; an igniter carried by the housing, and means carried by the drive wheel for engagement with the igniter to explode the charge; a pair of plunger abutments operating in the longitudinal opening in the housing and in the explosion chambers of the drive wheel, and pivoted operating levers having their one end connected to the plunger abutments, and means carried by the drive shafts for actuating the levers and operating the plungers.

683,735. PROCESS OF MAKING PETROLEUM PRODUCTS. Sam Dyson, Elland, and John Gaskell, London, England. A process consisting in mixing mineral oil with fatty acid, heating the mixture uniformly between the temperature 110° to 150° Fahrenheit, gradually adding an alkaline solution, and subsequently water, while constantly stirring, and maintaining the temperature.

683,751. CARBURETER. Benjamin A. Guy, Paris, France. The combination of a chamber having an air inlet, an inlet for a volatile liquid, and a carbureted-air outlet, the chamber being partially filled with a non-volatile liquid, and a movable member located in the chamber and arranged to convey the vaporizable liquid, which floats on the non-volatile liquid, toward the outlet of the chamber.

683,775. DIPPER FOR STEAM SHOVELS. Millard F. Kirkpatrick, Boise, Idaho. A dipper, and means for removing loose particles from the contents thereof.



683,628.

683,628. COAL OR ROCK DRILL. Isaac Wantling, Peoria, Ill. Comprises a boxing of two hinged sections, a semi-circular extension of one section, a member pivotally connected with the boxing, and a grip-bar adjustably secured in the member, and means of locking the grip-bar and the semi-circular extension.

683,795. PROCESS OF MANUFACTURING BRICKS, FURNACE LININGS, CRUCIBLES OR OTHER ARTICLES. William S. Rawson, Westminster, and Robert D. Littlefield, Thornton Heath, England. The process consists in mixing calcined magnesite and a fusible compound of boron, both pulverized, moistening with a little water, molding and then baking.

683,844. ATTACHMENT FOR ORE-SAMPLING MACHINES. Albert C. Calkins, Los Angeles, Cal. Assignor to Frederick W. Braun, same place. The combination with the rotating bucket and a shaking hopper in a sampling machine; of a common means for actuating both these parts, and a device for holding stationary the hopper while the buckets are being raised to the requisite speed.

683,864. MINING MACHINE. Henry C. Sergeant, Westfield, N. J. Assignor to the Ingersoll-Sergeant Drill Company, New York, N. Y. A mining machine which embodies a drilling cylinder and wheels for supporting the same, with the combination of a rock shaft furnished with rollers adapted to run behind the wheels on the same surface therewith; a brake-dog affixed to the rock shaft, bars pivotally connecting the shaft with the cylinder, and a spring applied to the shaft for drawing the brake-dog forward against a supporting wheel.

683,870. DREDGE BUCKET. James O. Wright, New Orleans, La. The combination with a pair of scoops; a central cross shaft; disks mounted on the shaft, and bars connecting the scoops with the disks in such manner that the center of the shaft coincides with the axis of rotation of the scoops; means for emptying and closing the buckets.

683,875. METHOD OF UNITING METAL PIPES. George H. Bailey, Pittsburg, Pa. Assignor to Bailey-Farrell Manufacturing Company, same place. The method consists in amalgamating the end faces of the pipes and portions of the bores thereof extending from the ends, inserting a ferrule within the ends so as to extend across the joint, and then applying heat and pressure to the joint so as to unite the end faces together and the inner amalgamated portions of the pipes and the ferrule to each other.

GREAT BRITAIN.

The following is a list of patents published by the British Patent Office on subjects connected with mining and metallurgy.

Week Ending September 14th, 1901.

15,134 of 1900. E. Besemfelder, Berlin. In making carbonate of soda, means of economizing the carbon used by collecting the escaping gases and using them for fuel.

18,152 of 1900. G. & K. Leuchs, Amberg, Germany. Method of using titanic acid for making opal glasses.

18,965 of 1900. Lord Masham, Bradford. Machine for nicking the back of a block of coal cut horizontally.

22,858 of 1900. F. W. Cross, London. A coal breaker and screen for use in connection with gas-making retorts.

8,376 of 1901. H. Brandenburg and A. Weyland, Kempenam Rhein. Recovering tin from slags by boiling with bisulphate of soda, thus separating the silica in gelatinous form.

11,919 of 1901. E. Teisler, Strele on Elbe, Germany. In the process for treating phosphates by sulphuric acid, method of preventing the escape of silicon fluoride.

14,240 of 1901. Atlas Machine Company, New York. Improved stone carrier for stone grinding and polishing machines.

15,083 of 1901. G. Rickles and J. Jones, Blaenau Festimog, Wales. Improved cross-cut stone-sawing machine.

PERSONAL.

Mr. J. Hays Hammond is at the Waldorf-Astoria, New York City.

Mr. Joseph L. Giroux, a mining engineer of Jerome, Ariz., is in San Francisco.

Mr. J. A. Morton, of Ontario, Ore., has returned to that place from Nome, Alaska.

Mr. J. F. Hoheisel has assumed the management of the Avino Mill, Avino, Durango, Mex.

Mr. Daniel Kane, of Placer, Ore., is now manager of the Oro Cache Mine near Salmon City, Idaho.

Mr. C. Stevenson, of Pittsburg, Pa., is now superintendent of the Keystone Mining Company at Leadville, Colo.

Mr. M. Rourke, late superintendent of the Camp Bird Mines at Ouray, Colo., has been in Montana examining mines.

Mr. S. S. Alley, of Lincoln, Neb., is in Butte, and will probably locate in Montana. He has mining interests near Pony.

Mr. Charles E. Hulick has been appointed superintendent of the Thomas Iron Company's furnaces at Island Park, Pa.

Mr. Carl H. Arlan, of Salt Lake, Utah., is with the Danville & Virgilina Copper Company developing mines at Virgilina, Va.

Mr. Dudley S. Dean, of Boston, Mass., recently visited the Althouse Mining Company's property, near Grant's Pass, Ore.

Dr. W. M. Blanchard has been appointed instructor in charge of the department of chemistry at De Pauw University.

Mr. H. A. Keller, general manager of the Trinity Copper Company, has returned to the mines in Shasta County, Cal., from Boston.

Mr. P. Petit, a French mining engineer, who has been developing some mining properties in Columbo, South America, is in San Francisco.

Prof. S. F. Emmons, of the United States Geological Survey, who has been in Leadville, Colo., for several months past, has gone to Arizona.

Prof. W. O. Crosby, of the Massachusetts Institute of Technology, who has been inspecting mines in Arizona, has returned to Boston, Mass.

Mr. C. Garnett Rothwell is with the Whitney Reduction Company at Gold Hill, N. C., where he is experimenting with their chlorination plant.

Col. E. B. C. Hambley, president of the Whitney Reduction Company, of Gold Hill, N. C., has returned from New York and is now at the mines.

Col. Frank Ray, of New York, with his brother, Dr. C. R. Ray, and Mr. J. S. Howard, has been looking over gold properties about Grant's Pass, Ore.

Mr. T. C. Link, formerly of Sombrerete, State of Zacatecas, Mex., has been appointed master mechanic at the Santa Barbara Mine at Parral. Chihuahua, Mex.

Mr. W. Moorehead, late superintendent of the Yellow Aster Mine, Kern County, has accepted a like position with the Rawhide-App Mine, Tuolumne County, Cal.

Mr. H. H. Logan, of New York City, is at Guaymas, Mex. Mr. Logan is largely interested in mining properties in Sonora, Mex., and in the Yaqui Canal property.

Capts. John and Hugh Moren, of the Monongahela River Consolidated Coal and Coke Company, recently returned to Pittsburg, Pa., from an extended trip in Europe.

Messrs. Louis and Ben Williams, who for 30 years were connected with the Copper Queen Mines of Arizona, are now operating the Napoleon Copper Mine in Calaveras County, Cal.

Mr. William Hale Thompson, of Chicago, Ill., has been inspecting the property of the Old Channel Mining Company, in which he is interested, on Galice Creek, near Grant's Pass, Ore.

Mr. K. Head. who has been with F. L. Head & Company, of Niles, O., has taken charge of 2 large mines in southern Ohio, operated by the Wheeling & Lake Erie Coal Company.

Dr. Nicholas Murray Butler, professor of philosophy and education, is acting president of Columbia University in place of Mr. Seth Low, who resigned to become a candidate for mayor of the city of New York.

Mr. W. Oakes Kibble, formerly of New Zealand, has taken charge of the cyanide works of the Johannesburg Reduction Works in Kern County, Cal., with tailings enough in sight to keep the plant busy for several months.

Mr. Thomas Hoatson, of Calumet, Mich., underground superintendent of the Calumet branch of the Calumet & Hecla Mine, has been recently inspecting the Calumet-Arizona Company's property, in the Copper Queen District, Ariz.

Dr. H. W. Richardson, who has had charge of the hospitals of the Minnesota Iron Company at Soudan, Minn., for several years, will become hospital manager for the Tennessee Coal, Iron and Railway Company at Birmingham.

Mr. Geo. Mitchell, general manager of the Cananea Mines of Mexico, now being operated by the Greene Consolidated Mining Company, is in San Francisco, where he has placed an order with the Union Iron Works for a 350-ton smelter.

Mr. George Steele, a well-known mining man from Shamokin, has taken a position with the Temple Iron Company as superintendent of 4 collieries near Pittston, Pa. For 15 years he has been with the C. J. Langdon Company at the Nelson Colliery, Shamokin.

Mr. S. P. Jones, of Atlanta, Ga., has been appointed assistant State Geologist of Georgia, vice Dr. Thomas L. Watson, resigned. Mr. Jones in 1900 refused an appointment on the Alabama Geological Survey to accept a fellowship at Vanderbilt University.

Mr. John H. Finney, late of Washington, D. C., has been appointed Western sales manager of the Stanley Electric Manufacturing Company, with offices in the Monadnock Block, Chicago. Mr. V. W. Bergenthal, formerly of Pittsfield, Mass., will be the engineer of the Western sales office.

Mr. Edward B. Jones, a young mining engineer, who resurveyed the workings of the Pleasant Valley Coal Company at Winter Quarters, Utah, after the terrible explosion 18 months ago, has been visiting friends at Hailey, Idaho. He is now in charge of mining enterprises in the Black Hills, S. Dak.

Mr. Carl Scholz, until recently secretary and general manager of the Riverside Coal Company, at Riverside, W. Va., and the Carbon Coal and Coke Company, near Cannelton, W. Va., both of which concerns were bought a short time ago by the Morgan interests, has taken up his residence temporarily in St. Louis, Mo., and expects to spend a considerable part of the winter in Indian Territory.

Mr. M. McCarthy, manager of the Elba Mine of the Mesabi Range, Minn., has resigned and gone to Birmingham, Ala., where he will have charge of the Ishkooda and Fossil groups of mines for the Tennessee Coal, Iron and Railway Company. Mr. Edwin Ball, under whom Mr. McCarthy worked in Minnesota, is manager of these mines. Mr. W. P. Chinn, late paymaster for the Elba, has been made local manager.

OBITUARY.

Jas. A. Nichols, an old Minnesota mining man, who was the first explorer for the Merritts, of Duluth, Minn., when they opened the Mesabi Range, died last week at his home at Owatonna, Minn.

SOCIETIES AND TECHNICAL SCHOOLS.

Engineers' Club of Philadelphia.—At the meeting on October 5th 42 members and visitors were present. Mr. A. B. Eddowes presented the paper of the evening upon "Some Unusual Locomotives." With the aid of lantern reproductions of photographs and drawings he described locomotives which had been built by Messrs. Burnham, Williams & Company, of Philadelphia, for special conditions in city and suburban traffic, in mining, on narrow gauge roads of steep grade with smooth and rack rails, and to give unusual power for heavy traffic.

The subject was discussed by Messrs. Carl Hering, Edgar Marburg, Henry Leffmann, L. Y. Schermerhorn and others.

Minnesota School of Mines.—This institution has begun its 10th year with an enrollment of 110. It is one of the colleges of the University of Minnesota, situated at Minneapolis, and has a well equipped ore testing plant, capable of doing work on a practical scale. An appropriation of $47,500 has been made by the legislature for a new laboratory building, which is to be ready for occupation in the fall of 1902. Two courses of 4 years each, leading to the degree of Engineer of Mines and of Metallurgical Engineer, are offered. The month of May is spent in practical work in some prominent mining camp or smelting center. This work is compulsory. Some of the smelters and large silver mines of Utah were studied on the last trip.

Michigan Engineering Society.—At the recent annual meeting of the board of directors in Lansing, the following officers were elected: President, Wm. B. Sears, of Saginaw; vice-president, Prof. M. E. Cooley, of Ann Arbor; secretary-treasurer, F. Hodgman, of Climax; directors, Dorr Skeels, of Grand Rapids; Prof. J. B. Davis, of Ann Arbor, and H. E. Riggs, of Toledo. It was voted to hold the next annual convention in Grand Rapids, January 7th, 8th and 9th, 1902. The preparation of the programme is in the hands of the president, with such assistants as he may select. Papers for the convention have been promised as follows: Prof. J. B. Davis, "The St. Clair Flats Survey"; Henry Campbell, "The Manufacture of Portland Cement"; A. L. Reed, "The Corona Water System"; Prof. L. G. Carpenter, "Reservoirs"; W. H. Goss, "The Dowagiac River Improvement"; H. G. Rothwell, "The Precious Metal Mines of South and Central America"; A. L. Holmes, "Water Cost and Water Waste"; E. Strong, "The Use of the True Meridian in Resurveys"; D. A. Brotherton, "Timber Cruising"; R. E. Horton, "Some Hydraulic Topics"; F. F. Rogers, "Some Road Topics"; Geo. L. Wells, "Something in Hydraulics"; E. W. Muenscher (possibly), "Railroads as They Should Be and as They are Located." The Board of Directors also has under consideration a number of topics of interest to the engineer on which the programme committee will endeavor to secure papers from men of recognized ability.

INDUSTRIAL NOTES.

The American Locomotive Company is reported to have secured a contract for 12 locomotives to be shipped to the Chilean Railways.

The Eynon-Evans Manufacturing Company, of Philadelphia, Pa., is working on a large acid resisting bronze condenser for the Lehigh Valley Coal Company, at Hazleton, Pa.

Davis Colby ore roasting kilns have been completed at the works of the Burden Iron Company, Troy, N. Y. The blast furnace of the plant is expected to blow in in November.

The Hazleton Boiler Company, formerly of 120-122 Liberty street, New York City, has just removed its main office to the works at Rutherford, N. J., only 9 miles from New York on the Erie Railroad.

A. L. Ide & Sons, manufacturers of the "Ideal" high speed automatic engine, are building a large addition to their works at Springfield, Ill. Many of these engines are in use at the mines in Illinois and neighboring States.

The Tirre Coal and Mining Company, of Lenzburg, and the Germantown Coal and Mining Company, of Germantown, Ill., have each ordered a lot of new mine cars from the Herzler & Hunninger Machine Works, of Belleville, Ill.

The new 10-in. merchant bar mill of the Carnegie Steel Company at its Duquesne, Pa., steel works is up. The 13-in. mill being built will start during the latter part of November. Both mills were built by the Morgan Engineering Company, of Worcester, Mass.

George D. Feidt & Company, of Philadelphia, Pa., have purchased the stock and good-will of Bullock & Crenshaw, dealers in and importers of chemicals and chemical apparatus. John G. Bullock will continue in charge of the chemical and chemical apparatus department.

The International Pump Company has been awarded a contract calling for the shipment of 2 large pumping equipments for the Calcutta Dock Commissioners, India. The outfits, which are to be built at the Laidlaw-Dunn-Gordon plant, at Cincinnati, will be of 1,000,000 gal. and 2,000,000 gal. capacity respectively.

The Federal Chemical Company, a combination of Kentucky and Tennessee fertilizer plants, has been organized by Louisville men, with a capital stock of $3,000,000. The plants incorporated in the new concern are the Globe Fertilizer Company and the Fox Chemical Company, of Louisville, and the Tennessee Phosphate Company, of Mount Pleasant, Tenn.

The Ottumwa Box Car Loader Company, of Ottumwa, Ia., reports sales as follows for September: Cardiff Coal Company, Cardiff, Ill.; Prairie Creek Coal Company, Huntington, Ark.; Kansas & Texas Coal Company, Pittsburg, Kan.; Pere Marquette Coal Company, Saginaw, Mich.; Curtis Coal Mining Company, Colorado Springs, Colo.; Las Animas Coal Company, Las Animas, Colo. Each of these companies has purchased one loader, and the last two have purchased 2 each. The sales of these machines now number about 70.

The Westinghouse Company is to erect a new town and a mammoth foundry plant at Stewart Station, on the Pennsylvania Railroad, a short distance east of Pittsburg. The company has secured 650 acres, and intends to concentrate all of its foundries in one plant and build around it, for the benefit of the employees, a town to be called Trafford Park. The cost of the improvements will reach $5,000,000, and over 2,000 men will be employed in the work. The company has now 3 foundries, one in Pittsburg, one in Allegheny, and the third in Cleveland.

The Robins Conveying Belt Company, of New York City, has been awarded a gold medal for its exhibits at the Pan-American Exposition at Buffalo. The company's exhibits at Buffalo consisted of 2 full-sized 20-in. conveyors with automatic self-reversing tripper in operation in the Machinery and Transportation Building and 2

model belt conveyors, on a scale of 3-in. to the foot, with automatic self-reversing tripper, in operation in the Minning Building. The conveyors have been in operation every day since the Exposition opened and have attracted much attention.

The London, Eng., office of tne Buffalo Forge Company recently opened at 39 Victoria street, under the management of D. W. Roper, has recently closed an important contract in connection with the new plant of the British Westinghouse Electric and Manufacturing Company, near Manchester, Eng. This contract is for apparatus for heating and ventilating the machine shop, foundry stores, carpenters' shop and box factory of the Westinghouse Company. The machine shop building is 900 ft. long, 420 ft. wide and 59 ft. high. To accomplish the heating and ventilating of this area 8 steel-plate fans, each one capable of delivering 60,000 cu. ft. of air per minute, and driven by a separate induction motor, will be provided; also a separate heater for each fan, a total of more than 10 miles of 1-in. pipe being used.

TRADE CATALOGUES.

An interesting little pamphlet containing a brief account of the origin and meaning of the alchemistic symbols, by Prof. Howe, of Washington and Lee University, is published by Baker & Company, the platinum refiners of Newark, N. J.

Persons and companies using a card system of records will be interested in a neat 42-page 6 by 9 catalogue published by the Shaw-Walker Company, of Muskegon, Mich. The pamphlet describes the Shaw-Walker card system and shows how it can be applied to cover recording for railroads, industrial corporations, mining companies, banks, and societies.

An illustrated 6 by 9 pamphlet of 48 pages sent out by the Sterling Company, of Chicago, Ill., describes the construction of Sterling water tube boilers and points out their economy, the ease with which they can be cleaned, and other claims to merit. Views of great industrial plants in which these boilers are installed, including one in Japan, are given, and there is a long list of testimonials from users.

Thomas D. Hallett & Company, of Philadelphia, are sending out a series of neatly illustrated little pamphlets describing some of the tools they manufacture. These include the S. D. K. pneumatic stone surfacing machine for rapidly truing off large stones; electric portable drills for use in places where shafting is not accessible and where direct electric current can be obtained; an electrically driven boiler steel drill; pneumatic hammers for chipping, caulking and riveting; a portable electric wood planer for planing any large floor space, and rope-driven portable drilling machines and portable shell drills.

The Walworth Manufacturing Company, of Boston, Mass., publishes a little cloth-bound book of 320 pages, showing the brass and iron goods and tools that it makes. The goods include cast iron fittings for pipe for both ordinary and extra heavy pressures; also standard weight and extra heavy flanged fittings; malleable fittings; standard brass and iron valves and cocks; Walworth gate valves; engine and boiler trimmings, etc. The list of tools includes steam fitters' and engineers' supplies. The company also makes or carries in stock water-work and hose goods, steam and hot-water heating apparatus, Walworth automatic link sprinklers, electric railway poles and brackets and gas machines and mixers. Some useful information about steam, hot water and pipes is given.

Howells mining drills for boring coal, rock salt, gypsum, shale, fire clay, etc., are described in a finely illustrated 6 by 9 pamphlet of 58 pages issued by the Howells Mining Drill Company, of Plymouth, Pa. The company claims to be the oldest and largest house of its line in America and states that its drills are used in every part of the world. The drills shown in the catalogue are made in many styles and patterns to cover a wide range of work. Some are operated by compressed air, others by hand power. Particular attention is called to the company's hand power "Buffalo" drill, stated to be a cheap but high-grade machine. The Wynne screwless mine drill and the Spry patent coal and rock drill are hand power machines that have elicited testimonials from users. A geared post drill is made for heavier work. The company's No. 2 air drill, it is remarked, with 60 lbs. air pressure, will bore 7 ft. per minute in coal and 3 ft. per minute in slate and fire clay. The augers furnished are up to 6 in. diameter.

Conveying machinery for metal, phosphate works, collieries, cement works, milling plants, etc., is shown in a 12mo cloth-bound book of 442 pages, published by the H. W. Caldwell & Son Company, of Chicago, Ill. The company states that every detail of construction in its new plant is designed to produce high-class machinery at a minimum cost. The company makes as its specialty the Caldwell helicoid conveyor, the manufacture of which is carried on in a separate building equipped with improved machinery. The flight in this conveyor is rolled while hot from a single strip of metal and the merits claimed are strength, capacity, ease of repair and freedom from laps and rivets. The firm makes a concrete mixer, using this conveyor, and also manufactures or carries in stock bucket conveyors and accessories, elevators, belt conveyors and accessories, pulleys, gearing, sheaves, sprocket wheels, conveyor chains, including the Ley detachable steel-bushed chain, hangers and pillow blocks, couplings, screens and the Cogswell mill for grinding alum, borax, carbon, salt, etc.

MACHINERY AND SUPPLIES WANTED.

If any one wanting machinery or supplies of any kind will notify the "Engineering and Mining Journal" what he needs he will be put in communication with the best manufacturers of the same.

We also offer our services to foreign correspondents who desire to purchase American goods of any kind, and shall be pleased to furnish them information, catalogues, etc.

All these services are rendered gratuitously in the interest of our subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, and have no pecuniary interest in buying and selling goods of any kind.

MACHINERY AWARDS AT BUFFALO.

We published in last week's issue the list of gold, silver and bronze medals awarded to exhibitors in the Department of Mines and Metallurgy at the Pan-American Exposition. We now give below a list of the prizes awarded in other departments in which the exhibits had a more or less direct bearing on mining, metallurgy and mining engineering.

MACHINERY SECTION.

Gold Medals.

MACHINE TOOLS.

Acme Machine Screw Company, Hartford, Conn., multiple spindle automatic screw machine.

American Tool Works Company, Cincinnati, O., 2 medals; radial drill; lathe.

American Tool & Machine Company, Boston, Mass., centrifugal machine.

Bullard Machine Tool Company, Bridgeport, Conn., 2 medals; turret and engine lathe; boring mill.

Bickford & Francis Belting Company, Buffalo, B, C and D grades of leather belting.

Bement, Miles & Company, Philadelphia, steam hammer.

Becker-Brainard Milling Machine Company, Hyde Park, Mass., vertical milling machine.

Brown & Sharpe Manufacturing Company, Providence, R. I., 3 medals; No. 6 automatic gear cutting machine; drilling, reaming, milling and measuring tools; No. 00 automatic screw machine.

Cincinnati Machine Tool Company, Cincinnati, O., upright drill.

Cincinnati Milling Machine Company, Cincinnati, O., universal milling machine.

Cleveland Twist Drill Company, Cleveland, O., twist drills, reamers and cutters.

Cleveland Machine Screw Company, Cleveland, O., 2 medals; automatic turret lathe and chucking machine; worm milling machine.

Detrick & Harvey Machine Company, Baltimore, Md., boring, drilling and milling machinery.

Ferracute Machine Company, Bridgeton, N. J., stamping machinery.

G. A. Gray Company, Cincinnati, O., planers (metal).

L. S. Heald & Son, Barre, Mass., American twist drill grinders.

Long & Allstatter Company, Hamilton, O., power punching and shearing machine.

Lodge & Shipley Machine Tool Company, Cincinnati, O., engine lathe.

Landis Tool Company, Waynesboro, Pa., universal grinder.

Morton Manufacturing Company, Muskegon, Mich., draw cut shapers.

Morse Twist Drill and Machine Company, New Bedford, Mass., machine tools.

Merrill Manufacturing Company, Toledo, O., pipe threading and cutting machine.

Niles Tool Works Company, Hamilton, O., boring and turning machines.

Prentice Brothers Company, Worcester, Mass., drill.

Potter & Johnston Machine Company, Pawtucket, R. I., automatic universal independent chuck.

Pond Machine Tool Company, Plainfield, N. J., planer.

Pratt & Whitney Company, Hartford, Conn., 3 medals; drills, reamers, cutters and measuring tools; profiling machines; double head milling machine.

Wilmarth & Morman Company, Grand Rapids, Mich., drill grinding machine.

Warner & Swasey Company, Cleveland, O., hollow hexagon turret lathe.

Washburn Shops, Worcester, Mass., drill grinders.

ENGINES, BOILERS AND PUMPS.

J. L. Alberger & Son, Buffalo, 125 H. P. Buffalo tandem gas engine.

Buffalo Forge Company, Buffalo, steam engines.

Lidgerwood Manufacturing Company, New York City, bridge erecting engine.

Lazier Gas Engine Company, Buffalo, gas and gasoline engines.

Marinette Iron Works Manufacturing Company, Marinette, Wis., Wallrath gas engine, 125 H. P.

August Mietz, New York City, kerosene engine.

National Meter Company, New York City, gas engines.

Otto Gas Engine Works, Philadelphia, Pa., gas engines.

Rodney Hunt Machine Company, Orange, Mass., water wheels and pumps.

MISCELLANEOUS MACHINERY, BELTING, ETC.

Alexander Brothers, Philadelphia, Oak brand No. 1 leather belting.

American Steam Gauge and Valve Manufacturing Company, Boston, steam gauges and engine fittings.

Austin & Eddy, Boston, Pioneer molding sander.

E. C. Atkins & Company, Indianapolis, Ind., machine saws.

American Steel and Wire Company, Chicago, diamond dies for drawing wire.

Buffalo Forge Company, Buffalo, blowers and fans.

Carborundum Company, Niagara Falls, N. Y., carborundum.

Chisholm-Moore Manufacturing Company, Cleveland, O., anti-friction differential chain hoist.

Dodge Manufacturing Company, Mishawaka, Ind., rope transmission.

Forster Pulley Works, Fairport, N. Y., wood split pulleys.

Fayerweather & Ladew, New York City, Hoyt brand leather belting.

Hay-Budden Manufacturing Company, Brooklyn, N. Y., anvils.

Jenkins Brothers, New York City, 2 medals; steam and water valves; Jenkins' '96 sheet packing.

Lunkenheimer Company, Cincinnati, O., valves, lubricators and engine fittings.

Lamb & Ritchie, Cambridgeport, Mass., lined pipe.

Morris Machine Works, Baldwinsville, N. Y., centrifugal pumping machine.

National Meter Company, New York City, water meters.

National Tube Company, Pittsburg, Pa., tubes and pipes.

Pittsburg Meter Company, East Pittsburg, Pa., water and gas meters.

Powers Regulator Company, Chicago, automatic temperature controlling apparatus.

Robins Conveying Belt Company, New York City, belt conveyor.

Reeves Pulley Company, Columbus, Ind., variable speed transmission.

John A. Roebling's Sons Company, Trenton, N. J., 2 medals; power transmission (wire rope); wire.

Rider-Ericsson Engine Company, New York City, Ericsson engine.

Straight Line Engine Company, Syracuse, N. Y., steam engine.

Chas. A. Schieren & Company, New York City, Bull's Head, Electric and Royal Extra brands leather belting.

Struthers, Wells & Company, Warren, Pa., 300 H. P. gas engine.

Shelby Steel Tool Company, Cleveland, O., seamless steel tubes.

L. S. Starrett Company, Athol, Mass., mechanical tools.

Western Tube Company, Kewanee, Ill., valves and cocks.

Henry R. Worthington, Brooklyn, N. Y., jet condenser.

Walworth Manufacturing Company, Boston, Mass., valves, fittings and tools.

Silver Medals.

MACHINE TOOLS.

Bradford Machine Tool Company, Cincinnati, O., engine lathe with turret attachment.

Brown & Sharpe Manufacturing Company, Providence, R. I., 2 medals; No. 2 universal grinding machine; No. 2 universal milling machine.

Bement, Miles & Company, Philadelphia, vertical milling machines.

E. W. Bliss Company, Brooklyn, N. Y., sheet metal stamping and drawing machines.

Bickford Drill Tool Company, Cincinnati, O., radial and multiple drill.

Diamond Machine Company, Providence, R. I., grinding and polishing machine.

Fay & Scott, Dexter, Me., universal turret and chucking machine.

Fox Machine Company, Grand Rapids, Mich., open side shapers.

Gisholt Machine Company, Madison, Wis., tool grinders.

Hoggson & Pettis Manufacturing Company, New Haven, Conn., the Sweetland chuck.

L. S. Heald & Son, Barre, Mass., American lathe center grinder.

Geo. Juengst & Sons, Croton Falls, N. Y., shaping machine.

Landis Tool Company, Waynesboro, Pa., plain grinders.

Morton Manufacturing Company, Muskegon, Mich., key seating machines.

Norton Emery Wheel Company, Worcester, Mass., Bath machine indicators.

Niles Tool Works Company, Hamilton, O., radial drills.

Niagara Machine and Tool Company, Buffalo, N. Y., sheet metal tools.

Oneida National Chuck Company, Oneida, N. Y., lathe and drill chucks.

Potter & Johnston Company, Pawtucket, R. I., 2 medals; shaping machines; Simplex automatic chucking machine.

Prentiss Tool & Supply Company, New York City, general arrangement of exhibit of machine tools.

Prentice Brothers Company, Worcester, Mass., lathe.

Pratt & Whitney Company, Hartford, Conn., 3 medals; automatic turret lathes; compound boring machine; automatic tool makers' lathe.

Rogers & Hemphill Machine Company, Alfred, N. Y., vertical boring and turning mill.

Samuel C. Rogers & Company, Buffalo, grinding machinery.

Warner & Swasey Company, Cleveland, O., vertical boring and chucking machines.

ENGINES, BOILERS AND PUMPS.

Ames Iron Works, Oswego, N. Y., automatic steam engines.

Ball Engine Company, Erie, Pa., steam engine.

Bessemer Gas Engine Company, Globe City, Pa., double cylinder 2-cycle gas engine.

Buffalo Gasoline Motor Works, Buffalo, gasoline motor.

A. S. Cameron Pump Works, New York City, steam and air pumps.

Deane Steam Pump Company, Holyoke, Mass., 2 medals; condensers; power pumps.

Fitchburg Steam Engine Company, Fitchburg, Mass., steam engine.
Foos Manufacturing Company, Springfield, O., gas and gasoline engines.
Kieley & Mueller, New York City, steam specialties.
Lane & Bodley Company, Cincinnati, O., Corliss steam engine.
Taber Pump Company, Buffalo, rotary pumps.

MISCELLANEOUS MACHINERY, BELTING, ETC.

American Steel and Wire Company, Chicago and New York City, cold drawn shafting.
American Blower Company, Detroit, Mich., fans and blowers.
American Machine Company, Buffalo, elevator bucket.
American Pulley Company, Philadelphia, Pa., the American pulley.
American Roller Bearing Company, Boston, Mass., roller bearings.
Buffalo Forge Company, Buffalo, punches, shears and forges; induced draft; blacksmiths' drills.
Burt Manufacturing Company, Akron, O., oil filters.
Chapman Double Ball Bearing Company, New York City, double ball bearing.
Chicago Pneumatic Tool Company, Chicago, pneumatic tools and appliances.
Chisholm & Moore Manufacturing Company, Cleveland, O., pneumatic drills.
Contractors' Plant Manufacturing Company, Buffalo, hoisting machinery and derrick fittings.
Dodge Manufacturing Company, Mishawaka, Ind., 2 medals; iron split pulleys, wood split pulleys.
S. R. Dresser, Bradford, Pa., pipe couplings.
Estate of W. S. Doig, Brooklyn, N. Y., box nailing machinery.
Diamond Drill & Machine Company, Birdsboro, Pa., belt lacing machines.
Eddy Valve Company, Waterford, N. Y., 2 medals; gate valves; Eddy fire hydrant.
Fulton Pulley Company, Fulton, N. Y., wood pulleys.
Field Force Pump Company, Lockport, N. Y., spraying machinery.
Foos Manufacturing Company, Springfield, O., attrition grinding mills and crushers.
Fairbanks Company, Buffalo, steam valves.
Greene Fuel Economizer Company, Matteawan, N. J., fuel economizer.
Jenkins Brothers, New York City, Jenkins' pump valves and disk.
Hazard Manufacturing Company, Wilkesbarre, Pa., wire rope.
Munson Brothers Company, Utica, N. Y., 2 medals; mill machinery; water wheels.
New York Leather Belting Company, New York City, Victor brand leather belting.
Wm. Powell Company, Cincinnati, O., oil cups and valves.
Philadelphia Pneumatic Drill Company, Philadelphia, pneumatic tools.
Reeves Pulley Company, Columbus, Ind., wood split pulleys.
Russell, Birdsall & Ward Bolt and Nut Company, Port Chester, N. Y., wrought iron bolts, nuts and rivets.
Standard Tool Company, Cleveland, O., twist drills, reamers, milling cutters and taps.
J. H. Williams Company, Brooklyn, N. Y., drop forged wrenches and chain pipe wrenches.
Wheeler Condenser and Engineering Company, New York City, Admiralty surface condenser, with combined air and circulating pump.
Weber Gas Engine Company, Kansas City, Mo., gas and hoisting engines.
Western Tube Company, Kewanee, Ill., structural tubing.

Bronze Medals.

MACHINE TOOLS.

American Tool Works Company, Cincinnati, O., 2 medals; planers; shaper.
Becker-Brainard Milling Machine Company, Hyde Park, Mass., horizontal drill.
David Bell Engineering Works, Buffalo, steam hammers.
Brown & Sharpe Manufacturing Company, Providence, R. I., 3 medals; plain milling machine; universal milling machine; plain grinding machine.
B F. Barnes Company, Rockford, Ill., wet tool grinder.
Cleveland Machine Screw Company, Cleveland, O., brass work lathes.
Cataract Tool and Optical Company, Buffalo, precision lathe and attachment.
Detrick & Harvey Machine Company, Baltimore, Md., automatic bolt cutter.
Fox Machine Company, Grand Rapids, Mich., drill presses.
Norton Emery Wheel Company, Worcester, Mass., Walker universal tool and cutter grinder.
Pratt & Whitney Company, Hartford, Conn., 2 medals; cock and key machine; centering machine.
Pond Machine Tool Company, Plainfield, N. J., lathe.
Whitney Manufacturing Company, Hartford, Conn., hand and screw feed milling machine.
Wheeling Mold and Foundry Company, Wheeling, W. Va., glass blowing machine.

MISCELLANEOUS MACHINERY, BELTING, ETC.

American Pulley Company, Philadelphia, wrought steel split pulley.
Atlas Pipe Wrench Company, New York and San Francisco, 2 medals; Atlas pipe wrenches; tube cleaners for water tube boilers.
Bessemer Gas Engine Company, Grove City, Pa., friction clutch.
Bashlin & Company, Warren, Pa., valves and oil cups.
Bierbaum & Merrick Metal Company, Buffalo, Lumen (a bronze for bearings).
Blodgett Manufacturing Company, Buffalo, machinists' gauges.
Buffalo Meter Company, Buffalo, water meters.
Cyclone Grate Bar Company, Buffalo, Cyclone grate bar.
Chicago Belting Company, Chicago, Reliance brand leather belting.
Chisholm & Moore Manufacturing Company, Cleveland, O., pneumatic crane.
Dodge Manufacturing Company, Mishawaka, Ind., friction clutches.
Fox Machine Company, Grand Rapids, Mich., universal trimmers.
A. A. Griffing Iron Company, New York City, steam separating traps (Bundy).
Garlock Packing Company, Palmyra, N. Y., Garlock packing.
Harrison Safety Boiler Works, Philadelphia, Pa., 2 medals; Cochrane steam and oil separators; drainage system for vacuum oil separator.
Ferdinand W. Hofele, New York City, fire escape.
Howard Iron Works, Buffalo, 2 medals; vises; bolt cutters.
Jacobson Machine Manufacturing Company, Warren, Pa., clutch pulley.
Robert A. Keasbey, Buffalo, magnesia covering.
Lidgerwood Manufacturing Company, New York City, reverse drum swinging gear.
Monarch Manufacturing Company, Waterbury, Conn., safety engine stop valves.
Monarch Fire Appliance Company, New York City, Kilfyre dry powder fire extinguisher.
Moran Flexible Steam Joint Company, Louisville, Ky., flexible joints.
Nemes Brothers, Troy, N. Y., shaking grate.
Norton Emery Wheel Company, Worcester, Mass., bench and floor grinding machinery.
National Pipe Bending Company, New Haven, Conn., coils of iron, brass and copper pipe.
Oneida Steel Pulley Company, Oneida, N. Y., steel pulleys.
Peerless Belt Lacing Company, Philadelphia, Peerless belt lacing.
George D. Rollins & Company, Philadelphia, Rollins' metallic piston rod packing.
Replogle Governor Works, Akron, O., water wheel governors.
Rheinstrom Brothers, Cincinnati, O., Karl Keiffer multiple perfection filters.
A. C. Rowe, New York City, Underwriters' fire extinguisher.
Sherwood Manufacturing Company, Buffalo, injector and boiler tube cleaners.
H. B. Sackett Screen Company, Chicago, means for screening and handling coal.
Trimont Manufacturing Company, Roxbury, Mass., pipe tools.
Underfeed Stoker Company of America, Chicago, Jones underfeed stoker.
Vulcan Iron Works, Chicago, pile driving machinery.
Wilmarth & Morman Company, Grand Rapids, Mich., friction countershaft.
Whitney Manufacturing Company, Hartford, Conn., chain.

ENGINES, BOILERS AND PUMPS.

Abendroth & Root Manufacturing Company, New York City, improved Root water tube safety boiler.
American Blower Company, Detroit, Mich., blower engine.
Knowles Steam Pump Works, New York City, triplex electric pump.
Murray Iron Works, Burlington, Ia., compound Corliss engine.
Otto Gas Engine Works, Philadelphia, Otto railroad water crane.
Skinner Engine Company, Erie, Pa., steam engine.
Snow Steam Pump Works, Buffalo, steam pumps.
Watertown Engine Company, Watertown, N. Y., Corliss engine.

Honorable Mention.

Abendroth & Root Manufacturing Company, New York City, Root's spiral riveted pipe.
Buffalo Emery Wheel Company, Buffalo, emery wheel foot power grinder.
Becker-Brainard Milling Machine Company, Hyde Park, Mass., grinding machine.
Brown & Sharpe Manufacturing Company, Providence, R. I., cutter and reamer grinding machine.
Cling-Surface Manufacturing Company, Buffalo, Cling-Surface belt dressing.
J. B. & J. M. Cornell, New York City, blowers and exhausters.
Cincinnati Milling Machine Company, Cincinnati, O., universal cutter and reamer grinder.
Dodge Manufacturing Company, Mishawaka, Ind., wood rim, iron hub pulleys.
Harrison Safety Boiler Works, Philadelphia, Cochrane feed water heater and purifier.
Hickman-Melhorn Company, Pittsburg, Pa., combination vise and pipe wrench.
Kensington Engine Works, Philadelphia, Beckham regulating system.
Kennedy Valve Company, New York City, iron and brass valves.
South Bend Fulley Company, South Bend, Ind., wood split pulleys with iron hubs.
Vincent Valve Company, Sandusky, O., globe and gate valves.
Warner & Swasey Company, Cleveland, O., special milling machine.

ELECTRICAL DIVISION.

Gold Medals.

American Steel and Wire Company, Chicago and New York City, electric wires and cables.
General Electric Company, Schenectady, N. Y., 3 medals; machinery and apparatus for generating and using electricity; electric lighting apparatus; electrical measuring instruments.
Pittsburg Reduction Company, Niagara Falls, N. Y., electrical conductors of aluminum.
J. A. Roebling's Sons & Company, Trenton, N. J., wires and cables.
Safety Insulated Wire and Cable Company, New York City, electric wires and cables.
Standard Underground Cable Company, Pittsburg, Pa., electric wires and cables.
Stanley Electric Manufacturing Company, Pittsfield, Mass., high tension alternating current apparatus.
Stanley Instrument Company, Great Barrington, Mass., electric wattmeters.

Silver Medals.

E. G. Bernard Company, Troy, N. Y., motor generator sets and accessories.
Bullock Electric Manufacturing Company, Cincinnati, O., dynamos and motors.
Crocker-Wheeler Company, Ampere, N. J., dynamos and motors.
Cutler-Hammer Manufacturing Company, Milwaukee, Wis., motor starters and controllers.
D. & W. Fuse Company, Providence, R. I., fuses and fuse fittings.
Edison Manufacturing Company, Orange, N. J., Edison-Lalande battery.
Electric Storage Battery Company, Philadelphia, 2 medals; methods and appliances for the distribution of electric energy; storage batteries.
Eureka Tempered Copper Works, North East, Pa., tempered copper and cast copper.
Gould Storage Battery Company, New York City, storage battery.
Hazard Manufacturing Company, Wilkesbarre, Pa., insulated wire and cables.
Northern Electrical Manufacturing Company, Madison, Wis., direct current dynamos and motors.
Stanley Electric Manufacturing Company, Pittsfield, Mass., measuring instruments.
Wagner Electric Manufacturing Company, St. Louis, single phase motors and transformers.

Bronze Medals.

American Engine Company, Bound Brook, N. J., direct connected dynamos.
Dicke Tool Company, Downers Grove, Ill., electric wiremen's tools.
Jantz & Leist, Cincinnati, O., electroplating dynamos and driving motor.
Keystone Electric Company, Erie, Pa., direct current generator.
Morris Electric Company, New York City, Morris rail bond and hydraulic splicing machine.
Onondaga Dynamo Company, Syracuse, N. Y., direct connected dynamo and electric motors.
Submerged Electric Motor Company, Menominee, Wis., submerged electric motor and propeller.
Chicago Fuse, Wire and Manufacturing Company, Chicago, fuse wires and links.

Honorable Mention.

Edison Manufacturing Company, Orange, N. J., 9-in. battery fan motor.
Jandus Electric Company, Cleveland, O., electric fan motor.
Robbins & Myers Company, Springfield, O., dynamos and motors.
Sprague Electric Company, New York City, electric motors.
Stow Manufacturing Company, Binghamton, N. Y., multi-speed motor and flexible shaft.

TRANSPORTATION.

Gold Medals.

Baldwin Locomotive Works, Philadelphia, Pa., steam and electric locomotives.
Brooks Locomotive Works, Dunkirk, N. Y., locomotives.
Bucyrus Steam Shovel Company, South Milwaukee, Wis., steam shovel.
J. G. Brill Company, Philadelphia, Pa., cars and trucks for electric roads.
Consolidated Railroad, Electric Light and Equipment Company, New York City, car light by electric power from the axle.
General Electric Company, Schenectady, N. Y., electric traction apparatus and system.
Gould Coupler Company, Depew, N. Y., car light by electric power from axle.
Howard Iron Works, Buffalo, elevators.
Lidgerwood Manufacturing Company, New York City, 2 medals; coaling ships at sea; electric ship's winch.
New York Car Wheel Works, Buffalo, cast iron car wheels.
Pressed Steel Car Company, Pittsburg, Pa., pressed steel cars.
John A. Roebling's Sons Company, Trenton, N. J., general exhibit in transportation.
Schenectady Locomotive Works, Schenectady, N. Y., locomotives.
Standard Railway Signal Company, Troy, N. Y., railroad signal apparatus.
Richmond Locomotive Works, Richmond, Va., compound locomotive.

Silver Medals.

Standard Steel Works, Philadelphia, steel tires and wheels and frames.
Sterlingworth Railway Supply Company, Easton, Pa., rolled steel coal car.
Simplex Railway Appliance Company, Hammond, Ind., Simplex bolsters for freight cars.

MANUFACTURES.

Gold Medals.

American Steel and Wire Company, New York and Chicago, flat steel springs.
Boyden Horse Shoe Company, Chatauqua, Pa., horseshoes.
Buffalo Scale Company, Buffalo, scales.
Pittsburg Reduction Company, Pittsburg, aluminum.
Taylor Iron and Steel Company, High Bridge, N. J., manganese steel.
J. H. Williams & Company, Brooklyn, drop forgings and special designs.

Silver Medals.

Abendroth Brothers, New York City, steam and hot water heaters.
Iron Clad Manufacturing Company, New York City, 2 medals; steel storage and shipping barrels; cold weld range boilers.
MacDougal White Lead Company and Buffalo Oil, Paint and Varnish Company, Buffalo, MacDougal white lead and Buffalo oils, paints and varnishes.
Muzzey Brothers, Paterson, N. J., aquarine cold boiler paint.
William J. Matheson & Company, Limited, New York City, white lead and flake white.
Norton Grinding Company, Worcester, Mass., samples of grinding.
Pratt & Letchworth Company, Buffalo, malleable iron and steel castings.
Pike Manufacturing Company, Pike Station, N. H., sharpening and grinding stones.

Bronze Medals.

American Steel and Wire Company, Chicago and New York City, Juniata horse and mule shoes.
Norton Emery Wheel Company, Worcester, Mass., India oil stones.

GENERAL MINING NEWS.

Oil Exports.—In September the United States exported mineral oils as follows: Crude, 10,916,969 gals.; naphthas, 1,496,815 gals.; illuminating, 80,213,782 gals.; lubricating and paraffin, 6,154,065 gals.; residuum, 2,616,710 gals.; total, 101,398,341 gals.; as against 88,657,778 gals. in the same month last year, showing an increase of 12,740,563 gals., or 12.5%. The total exports for the 9 months ending September 30th were 784,904,331 gals., or 56,683,198 gals., 7.2%, greater than last year. Ocean freight rates at the end of September were easy at 20@21c. to Calcutta, 22@23c. to Hong Kong and Yokohama, 23@24c. to Singapore, 23½@24c. to Rangoon, 24@25c. to Colombo, Shanghai and Saigon, 25@26c. to Padang and Amoy.

ARIZONA.

Gila County.

Cole & Goodwin.—P. J. Cole, who is superintending development work on this mine for a St. Louis Company who has the property bonded, is working 3 shifts in the shaft, which is down 230 ft.

Globe-Boston Copper Company.—This company is making good progress on its gallows frame and is setting the machinery at the I X L shaft. As soon as the shaft is unwatered sinking will be resumed. Superintendent Whittle is in charge.

Pinto Creek Company.—L. H. Richardson, of Houghton, and W. A. Holt, of Calumet, Mich., recently inspected the claims being developed by this company near the head of Pinto Creek. The company is composed entirely of Michigan men. Albert C. Sieboth, of Globe, is manager.

United Globe Mines.—Development is reported progressing satisfactorily at the company's mines near Globe, and the force of miners is being increased. The Gray Shaft is down 545 ft. and has cut native copper and cuprite ore. The production shows a gradual increase, the shipments to Bisbee in September numbering 22 cars.

Graham County.

Arizona Copper Company, Limited.—The production for the period from September 14th, on which date the new plant began work, to September 30th, was equivalent to 671 tons of copper. The sale of certain of the mines belonging to the company referred to in the report for the half-year to March 31st last has been carried through and the price, £150,000 sterling, has been paid in cash.

Pinal County.

Ray Copper Mines, Limited.—This company recently mortgaged its property in this county to the Trustees, Executors and Securities Insurance Company of London for the sum of £13,565, payable on June 30th, 1902.

CALIFORNIA.

Amador County.

(From Our Special Correspondent.)

Amador-Phoenix.—At these mines, near Sutter Creek, the new hoist has been completed and sinking on the new shaft begun. The mill is nearing completion. The rock continues good. James E. Dye, superintendent, is working 3 shifts.

Telegraph Hill.—Stanley H. Head is superintendent of this property, 5 miles southeast from Oleta, comprising 120 acres of hydraulic and 710 acres of drift gravel ground, owned and operated by a New York company under the management of H. Le C. Richards, of New York. The property was worked under the name of the Rancheria Placers in 1849 and the early 50's, supporting, it is said, a population of 2,000. The property was later worked as a drift gravel mine. Through lack of funds, etc., however, the mine closed down and lay idle up to May last. The present company has enlarged, retimbered and advanced the old tunnel to a point over 700 ft. in, retimbered the old drifts, put in 1,400 ft. of tramway, also houses, etc. The company is now putting in a new 250-ton Krogh gravel mill; gravel bin with a capacity of 250 tons; also blacksmith and timbering shed; offices, etc. The company also has under construction 2 reservoirs, one of 2,000,000 gals., the other of 26,000,000 gal. capacity, at which reservoir a crib support dam is building. The reservoirs will furnish water under a head of 158 ft.

Development shows a fine body of gravel, highly cemented and oxidized, running from 3 to 25 ft. deep, with a shale bed-rock and a capping of lava.

Calaveras County.

(From Our Special Correspondent.)

Del Monte.—At this mine, 5 miles from Railroad Flat, the tunnel is now in some 200 ft. from the shaft. The ledge holds out, and prospects are encouraging. The mill is now ready to commence crushing. J. O'Neil is superintendent.

Last Chance.—Work began last week on this mine at Hodson, adjoining the Royal, and a shaft will be sunk. This mine is owned by Dr. Weirich and David Cabera. Rich rock has been enocuntered in the tunnel, 125 ft. deep.

Melones.—The mill at Robinson's Ferry is now roofed in and the stamps will be in place within a month. The dam is finished and work on the flume is progressing rapidly. In the construction of this flume about 1,000,000 ft. of lumber have been used.

Del Norte County.

(From Our Special Correspondent.)

Copper prospects are being developed about 20 miles from Crescent City.

El Dorado County.

(From Our Special Correspondent.)

Alpine.—At this mine, 2 miles southwest from Georgetown, 2 Huntington mills are to be installed, also 3 Pelton water wheels.

Kern County.

(From Our Special Correspondent.)

Butte.—A milling of 75 tons of ore from this mine at Randsburg yielded about $4,700, an average of $62 per ton.

Mariposa County.

(From Our Special Correspondent.)

Work on the new dam on the Merced River is progressing. The work of putting in the center section was retarded by the channel being much deeper than was at first supposed. Bedrock was struck at 30 ft.

Garibaldi.—This mine, near Bull Creek, at Kingsley, was flooded with water from the old workings some time ago. A large hoisting engine was put in and 2 skips holding 650 gals. each. The shaft is 3-compartment, 2 skips hoisting water, the third being used for ore, timbers and men. The water skips make a round trip in 1 minute and 10 seconds, running steadily day and night. A large pump is being fitted up on the 300-ft. level and will pump from the tank in the cross-cut. A raise will be started soon and then stoping will begin. Some new changes have been made in the mill, and soon the Huntington mill will be in operation.

Silver Lead.—This mine, between Hornitos and Indian Gulch, has been bonded to Richard O'Brien, who represents Idaho capital. Work is to start at once. This is one of the many idle mines in the Quartzburg District that were once promising. It is claimed to be the same ledge as the celebrated Quartz Mountain.

Nevada County.

(From Our Special Correspondent.)

Brunswick Consolidated.—The new shaft from the 1,000-ft. level, down 100 ft., is to be sunk to 1,250 ft. before drifting starts.

California Gold and Copper.—This mine, near Spencerville, has been bonded to an Idaho company, which is developing the property. Capt. C. C. Bitner is superintendent.

De Noon.—The machinery going in for this mine at Bloomfield consists of 2 air-compressors, cages and other machinery for driving a long tunnel and sinking a new shaft. The work of erecting buildings and getting ready for the underground development is rushed.

Gold Tunnel.—The incline shaft at this mine, ½ mile west from Nevada City, has been retimbered to a depth of 160 ft. As soon as the drain tunnel is reached the work will proceed much faster. Arrangements are being made to supply the mines with electric power for both hoisting and pumping.

Mars Consolidated.—This property, 4 miles above Humbug Canyon, on American River, is producing some rich specimens. The 2 ledges, one 12 in. and the other about 20 ft. wide, are worked through a tunnel.

Osceola.—This mine at Deadman's Flat has been bonded by W. W. Kirkhan and L. A. Rose, who are prospecting. There is a tunnel which shows a large ledge. Rich ore was taken out in former years.

Red Cross.—This mine, in the Washington District, is operated by J. A. Brent. A good ledge has been uncovered at 150 ft. and the mill is crushing steadily. The owners think they will develop a fine property.

Sailor Flat Mining Company.—This company has elected the following directors for the ensuing year: Mrs. S. N. Williams, Mrs. Annie Campbell, W. H. Wiseman, O. D. Campbell, Jr., and D. E. Morgan.

Thirty-Seven.—This mine, on Deadman's Flat, is being worked by 7 old miners, who, on the 200-ft. level have uncovered a 6-in. vein of rich gold ore lying next to a heavy streak of copper.

Plumas County.

(From Our Special Correspondent.)

It is stated that R. McArdle and Thomas McDonald, who located several niter beds about 20 miles south of the Needles, have bonded them to an Eastern syndicate for $30,000.

Bagdad Mining and Milling Company.—The Ludlow mines, operated by this company, are being worked on quite a large scale. The ore body lies in 5 ledges, said to average over $10 per ton. A recent milling of 1,000 tons at the Barstow Mill yielded $17,000. Fourteen discovery shafts have tapped the ledges at different points, showing about 200,000 tons of ore in sight. The 300-ft. shaft discloses two other veins. The company is now sinking for water for milling purposes, and if successful the mill at Barstow will be moved to the mine. E. H. Stagg is general manager.

San Diego County.

(From Our Special Correspondent.)

American Girl.—These mines are reported bonded to an Eastern syndicate for $2,000,000. They are located in the Cargo Mucacho Mountains, 23 miles northwest from Yuma and 6 miles from Ogilby, and comprise 6 claims on which large bodies of free milling gold ore have been developed. The principal owners are H. H. Markham, G. C. Coffin, F. S. Dagget, of Pasadena, Cal., and D. W. Fields and Thomas Johnson, of Los Angeles.

Shasta County.

(From Our Special Correspondent.)

Backbone Mining Company.—This company, owning the Clipper and other valuable mining properties, has settled the litigation that has retarded progress for the past few years. The company has appointed A. di Nola and H. J. Wicker as managers, and will begin development work at once.

Black Spider.—This well-known mine near Shasta is in litigation on foreclosure proceedings.

Mt. Shasta.—It is reported that this mine, near Shasta, has reverted to the Mt. Shasta Gold Mining Company, the former owners. The past record of the mine as a producer has been good.

Shasta County Smelting and Refining Company.—This company has been incorporated by S. W. Fuller, J. D. Heard, H. Page, E. J. Foster, S. T. Bernhard and E. Arps, with a capital stock of $200,000.

Trinity Copper Company.—It is reported that this company has secured all the water rights, wagon roads, lands, etc., of the Copper Belt Railway and Power Company, and has made the first payment on the purchase price. The power plant will be located on the McCloud River. The details of the transfer were arranged in Boston by Thomas E. Ryan, president of the Copper Belt Railway and Power Company, and Thomas W. Watson, president of the Trinity Copper Company. The surveys for the electric railway from Kennett to De Lemar, and from Kennett to the Shasta King Mine, are practically completed, the necessary rights of way secured and construction work can be started on short notice.

Tuolumne County.

(From Our Special Correspondent.)

Mack.—The new 10-stamp mill at this mine at Big Oak Flat is nearly completed. All the machinery is on the ground. The new incline 2-compartment shaft is down 150 ft. The hoist is operated by a gasoline engine. A large force of men is employed and 3 shifts are worked. The vein is from 6 to 10 ft. wide. C. L. Lang is superintendent.

Nugget.—This claim in North Sonora is being reopened, the old tunnel cleaned out, new tracks laid, etc. The mine was formerly a good producer of gold, but has lain idle some time.

Poorman's Friend.—Assays from this mine, south of Carters, give over $75 free gold, while south of Carters, give over $75 free gold. The veins are from 3 to 6 ft. in width, in a slate and granite formation. The developments consist of four tunnels, as follows: No. 1, 35 ft.; No. 2, 100 ft.; No. 3, 150 ft.; No. 4, 180 ft., and a still lower tunnel can be driven, which will give backs for stoping at lowest point, 1,000 ft. The lowest grade rock runs $7. There are about 400 tons on the various dumps, which the owner says will not mill less than $8 per ton.

Puerto Fino.—The work of erecting the hoist, installing an air compressor and retimbering the old shaft at this mine near Carters is finished, and sinking has begun. The shaft is to be sunk to 225 ft. and then a cross-cut will be run south about 300 ft. to tap another vein. The vein is 16 in. wide, carrying rich ore.

Rawhide-App.—These mines, now controlled by Capt. W. A. Nevills, are to be operated on a much larger scale than formerly. W. Moorehead is superintendent.

Rhode Island.—This mine, on the East Lode, 2 miles south of Carters, is being put in working order for resumption of work at an early date. The boilers have been reset and a new pump with a capacity of 100 gals. per minute is on the ground. This pump will be placed at the bottom of the 450-ft. shaft. At the 400-ft. a pump with a capacity of 200 gals. is now installed. They expect to have the mine dry in a few weeks.

Tuolumne Electric Light and Power Company.—This company is preparing to put in an electric plant near Jacksonville, and have placed an order with the Westinghouse Electric Company. The officers of the company are: C. T. Lindner, president, and J. A. Kennedy, vice-president and general manager. The plant is to be located on the Tuolumne River, 4½ miles below Jacksonville, and to generate 2,000 H. P. The dam will be located about 5½ miles further up the river.

COLORADO.

Gilpin County.

(From Our Special Correspondent.)

Mining Deeds and Transfers.—Van B. Straight to W. Dugger, 1/6 interest Lucy Agnes Lode in Hawkeye District; Frank Hepburn to James Faulkner, the Oom Paul Lode in Gregory District; George W. Fertig to Jacob Flitle, the Reserve Tunnel Site, Gold Reserve, Rile, Goose and Gauder Lodes and Mosquito Placer in Wisconsin District.

Continental Mining Company.—A local company has been organized with A. Simonds, Central City, as manager, a shaft-building 20 by 48 ft. has been erected, and a 25-H. P. gasoline plant installed. Sinking is to start, the depth being only 120 ft.

Defiance Gold Mining Company.—Returns from the second class ore give values of $157 per ton, and a 50-ton shipment of concentrating ore is being made. New Orleans, La., parties are interested.

Gilpin Mill Company.—The east section of 25 slow drop stamps is being remodeled. Deeper mortars will replace the old ones, and a new engine will be put in. John Key, Black Hawk, is manager.

Mingo Gold Mining Company.—A shaft house 20 by 40 ft. is being erected on the Mingo Claim in Lake District, and a small steam plant has been installed. The property is 200 ft. deep and sinking will start. Denver parties are interested.

Missouri.—Denver parties have taken a lease and bond on this property in Russell District. The water has been taken out, a pump installed and miners put to work in the 300-ft. level. W. Woods, of Central City, is in charge.

Susquehanna.—Buildings covering 34 by 60 ft. have been erected on this property near Black Hawk. Ore has been opened up at 200 ft., carrying gold, copper and lead values of $70 per ton. Local parties are interested, with J. W. Campbell, Central City, as manager.

Two-forty.—Local parties are the owners and leasers are taking out smelting ore running $170 per ton. W. Job, Central City, is manager.

Lake County—Leadville.

(From Our Special Correspondent.)

Leadville Ore Tonnage.—The present output is 2,250 tons a day of all classes of ores.

Smelter Situation.—Some of the biggest sulphide producing mines are able to ship but a small tonnage owing to lack of roasting capacity at the smelters, while some mine managers claim that there is an effort by the American Smelting and Refining Company to raise treatment charges by accepting only higher grade ores. Vice-President Sewell, of the Smelter Company; Daniel and Simon Guggenheim, S. W. Eccles, F. W. Guiterman and others visited the Leadville plant this week. They said it will be the aim of the smelters to handle every pound of ore that can be produced. An independent smelter is announced by men at the head of the New Monarch Mining Company of Leadville. The capitalization is $3,000,000 and the plant is to be erected at Salida, about 50 miles from Leadville. The company is to be known as the Ohio & Colorado Smelting Company, and is headed by J. C. Kortz, Timothy Goodwin, Wm. Hawkins, J. M. Thomas, H. E. Reddington and G. A. Steinberger, who are directors for the first year. Mr. Kortz, of Cleveland, O., is president, and Tim Goodwin, of Leadville, manager of the New Monarch Mining Company. Mr. Goodwin states that the new smelter will be built immediately and will have a capacity of 1,000 tons a day. The new zinc smelter, to be built by Belgium and American capitalists at Pueblo, is an assured fact, and Mr. Guggenheim states that work will likely start within a month.

Banker Mining Company.—Some good copper ore showing gold values is being broken from a streak in No. 1 shaft.

Benton Mining Company.—Through the Park Lode No. 1 the first shipments are being made. The ore body is being developed at the 325 ft. level. The stuff runs almost 1 oz. in gold and a small value in silver and copper.

Bug Gold Mining Company.—The new shaft in Lincoln Gulch is showing good results. New York people recently took a large amount of this stock and a fine plant of machinery is being put in. It is intended to erect a mill in the spring.

Hap Hazard Group.—The Hahnewald Brothers have for several years been working in a small way on this group in Lake Park. They have leased the entire property to a combination headed by Thos. Ovens, which will put in a fine plant of machinery and sink a new shaft. The indications for a big mine are encouraging.

Iron Silver Mining Company.—Besides pushing new work through on the Stevens Shaft, the company is handling 200 tons a day from the Moyer, a portion of which is zinc ore. The crude sulphide produced contains small gold values.

La Plata Imperial Company.—This London concern, owning the old La Plata Mine here which has not been actively operated for some years, may lease to local people, who will work on an extensive scale.

Niles Augusta.—The lessees are elated over a discovery of chlorides 3 ft. thick in an upraise at the 225 ft. Assays average 25 to 110 oz. silver to the ton.

Nisi Prius Leasing Company.—A new pumping plant is being installed and the 750-ft. shaft is to go deeper.

Rialto Leasing and Mining Company.—This Boston combination is arranging in connection with Colorado stockholders to resume work. It is understood that money has been raised in the East to carry ahead the work on No. 2 shaft.

Tarshish Mining Company.—At the 335-ft. level the ore shows 2 faces of mineral 40 ft. apart. Work is also being pushed in the lower levels on a streak of copper sulphide.

Valley Combination.—This includes the Valley, Forest Rose and Dispute Claims in upper Big Evans. The property, in addition to 6 claims owned by the Chicago & Leadville Mining Company, has been leased to an Eastern syndicate headed by W. E. P. Fogg, of Springfield, Mass. J. W. Dean, who is in charge, has secured a lease on the Pawnolos Group, which is to be developed.

San Juan County.

Kendrick & Gelder Smelting Company.—This company, owning smelters and mines at Silverton, has made the bond and lease on the Henrietta and Lizzie Mines. All the rest of the property of the Kendrick & Gelder Smelting Company, with assets of $2,145,032, as shown in the quarterly settlement, is reported paid for in full, making the final payment on all of the company's holdings. The Kendrick Promotion Company, of Denver, is at the head of the enterprise.

IDAHO.

Blaine County.

Black Cinder.—An important strike of ore is reported from this group of mines on the Hailey gold belt. The ore body was cut some weeks ago on the 200 and 400 levels. It is reported 3½ ft. thick, consisting of 2 well-defined streaks. One streak is 18 inches thick, and carries galena that assays high in silver. The other is 2 ft. thick, and carries free gold.

Custer County.

(From Our Special Correspondent.)

The Salmon River Railway was completed according to schedule on October 1st, and trains are now running regularly from Blackfoot to Mackey, the present terminus of the line, a distance of 85½ miles.

Mackey is building up rapidly and promises to be a lively town by spring.

Mackey Smelter.—Grading at Mackey is completed, and a masonry retaining wall 200 ft. long, 30 ft. high and 12 ft. thick, is nearly finished. The plant will be a modern type copper smelter with 2 stacks, each of 300 tons daily capacity. The machinery is furnished by the Allis-Chalmers Company, 20 car-loads have already arrived at Blackfoot, and it will be sent over the branch as fast as the foundations are ready.

White Knob Company.—This company is now employing 400 men on its various mining and building operations. The Copper Basin Group, which it is developing under bond, is showing up well.

Elmore County.

Crown Point.—This group of mines at Dixie, was recently transferred by the Dan Reber Company to a Boston syndicate represented by William Sweet. The sale was negotiated by T. F. Halveston through Mr. Sweet. The consideration is reported at about $200,000. The Boston company is in possession and is doing some exploration work. Dan Reber is in charge as superintendent; 20 men have been employed on this work. The group is one of the largest in the State, embracing about 60 full claims, together with some mill sites. The property has been worked for several years by Dan Reber.

Idaho County.

R. A. Hendricks has sold for $20,000 cash 7 quartz claims near Marshall Lake, south of Salmon River, to J. D. Stone, of Pueblo, Colo. The ore is mostly free milling, and the ledges are from 2 to 4 ft. wide.

Crooked River Mining and Milling Company.—This company filed articles with the county auditor. The incorporators include the attorney-general of Montana, his two brothers and several local men. Their property is on Crooked River, south of Elk City. Over 500 ft. of tunnelling has been done, showing a body of ore.

Daisy.—At this mine at Neal the shaft is down 210 ft., and all recent development has been above that level. The vein has been thoroughly explored from there to the surface and the shaft will be sunk 75 or 100 ft. farther. The mill has been running constantly and the clean-ups have been satisfactory; everything being put through the mill that comes from the stopes. G. W. Bredeshoft is manager.

Lemhi County.

(From Our Special Correspondent.)

Iron Crown Mining Company.—This company was recently organized in Salt Lake City to develop a large group of lead-silver prospects in the Spring Mountain District. The property has merit, and promises to make a good mine.

Pacific Dredge Company.—This company, near Salmon City, is pumping out its pond to see what machinery is left after the boiler explosion of last month. The company has a large tract of good ground left, and will probably rebuild the boat.

Pollard.—This coal mine, 2 miles west of Salmon City, still shows evidence of permanency. The entry is in 200 ft. The seam is 6 ft. wide with 3 narrow partings of soft clay 1 to 2 in. thick. The coal is a lignite and is said to compare with the Pleasant Valley coal in Utah. Eight men are employed on development, and to supply the local demand. The fuel is delivered at Salmon City for $5 per ton, and gives satisfaction. This is the first profitable coal deposit so far discovered in Idaho.

ILLINOIS.

Frankfort County.

West Frankfort Big Muddy Coal Company.—Citizens of West Frankfort have incorporated this company, with a capital stock of $25,000, for the purpose of operating a coal mine at West Frankfort.

Sangamon County.

(From Our Special Correspondent.)

Republic Iron and Steel Company.—The coal mine at Springfield is working. The company is putting in a tail rope haulage plant and an additional boiler, but will not have the haulage plant in operation for a month or more. P. G. Matheny, of Springfield, is general superintendent.

INDIAN TERRITORY.

Fort Smith and Western Railroad.—Plans are reported prepared for the development of an immense coal tract at a cost of about $500,000. Pittsburg, Pa., capital is largely interested and A. W. and R. B. Mellon, with H. C. Frick, are said to be among the stockholders. A line is being surveyed from Fort Smith, Ark., to Guthrie, Ok. The road will be 20 miles long and is to be built at once. It is the intention of the company to make the capacity of the initial opening about 250,000 tons. Work will be started this month.

KANSAS.

Cherokee County.

(From Our Special Correspondent.)

Zinc Ore Strike.—An immense run of zinc ore has been developed on the Helen Hunt lease, 1 mile north of the famous North Empire District. The company prospected enough with a drill to show that the run is of large dimensions, and a shaft has been sunk, striking the ore at 130 ft.

MICHIGAN.

Copper—Houghton County.

Wolverine.—The September output amounted to 254 tons of mineral.

(From Our Special Correspondent.)

The Bigelow-Lewisohn accumulation of copper on the docks at Dollar Bay will be shipped this season, the contract having been let to the Western Transit Company, of Buffalo, N. Y. So far about 800 tons of refined metal have been shipped from the pile and the remainder will be shipped during the next 30 days. The copper now stored on the docks and that that will be produced during the next 60 days is worth about $3,500,000. A large part of it has been sold to Connecticut brass manufacturers.

Atlantic.—This company has filed articles of incorporation, the corporate existence of the old company having expired.

Wolverine.—The Portage Lake Foundry and Machinery Company has shipped 7 car-loads of jigs, castings and machinery to the new stamp mill on Traverse Bay.

Copper—Keweenaw County.

(From Our Special Correspondent.)

Central Mining Company.—The company has purchased a new diamond drill equipment and will start exploring soon. It owns 21,000 acres of land. Work at the mine was suspended a few years ago. Exploration for the Kearsarge amygdaloid lode has been conducted for a few months.

Copper—Ontonagon County.

(From Our Special Correspondent.)

Mass Consolidated.—The production of mass and barrel copper continues heavy.

Michigan.—Several heavy masses, one weighing 6 tons, were encountered in the 6th level of "A" shaft. The pumps are being lowered, as the water in the old Minnesota workings is down to the 8th level.

Iron—Menominee Range.

Dober.—This mine at Stambaugh is to have a large ore crusher installed. The mine is controlled by the Oliver Mining Company.

Grininger.—This property, adjoining the Dober at Stambaugh, is to be explored by the Verona Iron Company—the Pickands-Mather concern. Ore has been found in drill-holes, but the over-burden is 80 ft. of quicksand and gravel, making shaft sinking costly.

MINNESOTA.

Iron—Mesabi Range.

(From Our Special Correspondent.)

Adams Mining Company.—This mine is shipping very heavily, and the year's total will be about last year's output of nearly 800,000 tons. The Spruce, operated in connection with the Adams, will mine about 50,000 tons.

Fayal Iron Company.—Fayal's shipments to date amount to about 1,325,000 gross tons. The stockpile at the opening of navigation was comparatively small.

Interstate Mining Company.—The new Columbia property, a prospect at Virginia, being developed by Jones & Laughlins, has closed down indefinitely on account of a strike, though the men were getting an average of $2.50 for 8 hours work. The Columbia is very wet. A small amount of ore has been hoisted this summer and will be shipped. The Interstate Mining Company will now push work on the Lincoln, a property nearly adjoining and on the Grant, a State lease in T. 58, R. 19. At the Lincoln 100 men will be employed during the winter.

Lake Superior Consolidated Iron Mines.—This company is testing its leasehold interest north of the Burt and Day mines at Hibbing. Three drills are in operation.

Sharon Ore Company.—The output is nearly 1,000 tons a day, and may be increased to about 1,200 tons. The mine will produce this year from 70,000 to 75,000 tons and will be stripped for a heavy output next season. Additional exploration has shown the ore body to contain nearly twice the 15,000,000 tons estimated, and it is now one of the very large mines of the Mesabi. Its ore is of splendid physical and chemical character, and the property is an exceedingly valuable asset of the Sharon Steel Company.

Shenango Iron Company.—The development of the Shenango property, bought last spring by the Shenango Iron Company at $500,000 from Messrs. Kinney, Howe and Washburn, of Duluth, has started with Capt. Trezona in charge. There is a 100,000-ton annual minimum with a 20c. per ton royalty to Jas. McCahill, of Duluth. Shipment will be made next year up to the minimum at least. The property contains a large body of high-grade bessemer ore.

W. J. Olcott, Mesabi Range manager for the United States Steel Corporation, has taken a lease of ½ interest in 1,346 acres of land on the ore formation in T. 58, R. 16, from the various Higgins interests. The royalty on the ½ interest is 10c. per ton. The minimum on the entire tract is to be 100,000 tons a year, and exploration is to begin soon.

Iron—Vermilion Range.

(From Our Special Correspondent.)

Oliver Iron Mining Company.—This company is said to be negotiating for the lease of the lands of Lazarus Silverman in section 25, T. 63, R. 12. It is rumored that the company has found iron in the lands of the 63-12 Iron Company, on section 25, that joins its Savoy and Sibley mines.

MISSOURI.

Jasper County.

(From Our Special Correspondent.)

Joplin Ore Market.—Operators holding top grade zinc ore held out for an advance, but finally sold at the price offered. Lower grades advanced beyond their usual proportion and in some cases $1 more was paid than during the week before. Lead ore remains firm, with no change. Lead ore producers are anxious that the Argentine, Kan., plant of the American Smelting and Refining Company, as the plant was a consumer of lead ores, resume operations.

Following is the turn-in by camps of the Joplin District for the week ending October 13th:

	Zinc, lbs.	Lead, lbs.	Value.
Joplin	2,419,060	587,230	$45,101
Galena-Empire	1,063,760	171,880	16,229
Carterville	1,847,060	269,990	28,442
Oronogo	676,960	61,730	9,814
Webb City	680,800	36,300	8,414
Aurora	495,190	25,420	5,496
Zincite	489,480	11,010	6,619
Carl Junction	315,830	.....	4,264
Duenweg	190,460	31,150	3,010
Spurgeon	136,150	76,660	3,416
Cave Springs	170,970	14,280	2,384
Granby	169,000	79,000	4,122
Badger	199,540	21,600	2,906
Stotts City	97,280	.....	1,216
Total	9,051,550	1,386,250	$141,433
Total, 41 weeks	384,677,180	44,591,240	6,413,354

Zinc value for week, $109,218; lead, $32,215; zinc value 41 weeks, $5,317,706; lead, $1,095,648.

The top price for zinc ore during the week was $27.50 per ton, upon a straight bid. The assay basis advanced to $24 per ton for 60% ore. An unconfirmed rumor reported some choice zinc ore settled for on a basis of $25 for 60% ore.

Lead ore brought $23.25 per 1,000 lbs., delivered, and the entire production was cleaned up. The Picher Lead Company purchased almost all lead ore of the district.

The production last week shows an increase of 4 tons of zinc ore and 12 tons of lead ore over the corresponding week of last year.

Zinc Oxide Plant.—The Joplin zinc oxide plant is now nearing completion and a purchasing agent is now securing material for its initial run. Litigation to prevent the new works from starting was anticipated, but upon assurances that by the new method the fumes would not be obnoxious, residents near the plant withdrew objection.

MONTANA.

Cascade County.

(From Our Special Correspondent.)

Ripple.—P. E. Collins, of Helena; J. H. Armington and D. C. J. Baker, of Neihart, have purchased this property for $50,000 cash. It is the intention of the new owners to extend the tunnel 1,200 ft. and cut the ore shoot found on the surface, from which shipments running as high as $1,200 in gold and 15,000 oz. in silver to the ton have been made. The ore is a combination of native silver and free gold, massive.

Deer Lodge County.

(From Our Special Correspondent.)

Anaconda Copper Mining Company.—The smelter known as the "Upper Works" of this company at Anaconda, is nearly closed down, probably for good. The concentrating mill is already out of commission. In the calcining department the 40 Bruckner roasters are cold and so are the Wethey furnaces; the only ones in use are the 4 McDougall roasters. Of the 11 reverbatory furnaces but 5 are running. It is expected that the next 6 weeks or so will see the entire plant cleaned up and all fires drawn preparatory to transfering operations to the New Washoe Works, the concentrating department of which is nearly ready.

New Southern Cross.—Ben. Harris, secretary of this company, has started a force of miners sinking a new shaft on the Southern Cross claim. The company announce that a cyanide plant will be built in the spring.

Lewis & Clarke County.

Montana Mining Company, Limited.—The output for September was: Gold, 1,923 oz., and silver, 8,120 oz., obtained from 2,200 tons of ore crushed in the mill, clean-up of old mills, and 10,269 tons of tailings from the dams. The estimated realizable value of the produce of crushings is $10,500; of clean-up, $1,500; and of tailings, $31,200; total, $43,200. The treatment of 10,269 tons of tailings cost $10,800, and the total expenses were $23,800, leaving an estimated profit of $19,400.

Madison County.

Bell.—The 10-in. vein of high-grade copper ore encountered in this mine continues to improve with development. Manager Davis has 22 men employed in the mine and in grading and framing timbers for the mill.

Red Bluff.—At this mine the superintendent is preparing to erect a 40-ton mill.

Red Chief.—This mill, near Norris, has shut down temporarily. At the Red Chief Mine men are cutting a water tank and pump station on the 200-ft. level, the intention being to sink the main shaft 100 ft. deeper. The mill is equipped with a Merralls roll breaker, a Merralls centrifugal mill, copper plate and Wilfley tables, reducing the second-grade ore 10 tons into 1, the product being concentrates containing gold, silver, lead and iron sulphides, worth about $100 per ton. The Red Chief is a shearage zone vein in mica schist. The main shaft is 200 ft. deep, with about 500 ft. of lateral workings on this level. Two raises connect with the first level, and stoping has started. On the 100-ft. level there are about 600 ft. of drifts, and one raise connects with the surface, affording ventilation. At the 200 are two No. 7 Knowles pumps to drain the mine.

Wall Street Mining Company.—This company has purchased the Copper Cliff, Republic, Comet, Chicago and 2 other claims near Virginia City. The company will drive a cross-cut tunnel to tap the leads which will be over 1,000 ft. long. J. A. Largent, secretary of the company, spent several days at the claims lately.

Powell County.

(From Our Special Correspondent.)

Northwestern Gold and Sapphire Company.—This company has 400 acres of placer grounds at the upper end of the Dry Cottonwood, about 18 miles from Butte. It is getting the ground opened up by a bedrock flume and is now constructing a reservoir and ditch along the side hill, which will give a pipehead of aout 50 ft. The company expects to have everything ready for starting the pipe when the spring water runs. Albert Sigler is in charge.

NEVADA.

Eureka County.

(From Our Special Correspondent.)

Eureka Shipments.—Ore shipments by rail from the mines near Eureka for the week ending October 4th were: Eureka Consolidated, 74,840 lbs.; Excelsior, 114,320 lbs.; Jackson, 43,200 lbs.; from Hamilton and Rocco-Homestake, 101,720 lbs.

Nye County.

(From Our Special Correspondent.)

Tonapah District.—One shipment of 16½ tons of ore from this district returned $16,977, an average of $376 per ton. Plans have been laid for the erection of water-works about 12 miles from Tonapah. The water will be pumped to an elevation of 700 ft. The pipe and machinery will be in Tonapah in a few days. The Tonapah Company has ordered a 25-H. P. gasoline hoist for its mine, and will sink a shaft 200 ft.

White Pine County.

(From Our Special Correspondent.)

Ely Camp.—At this old camp, about 85 miles southeast from Eureka, 50 copper-gold claims have been purchased by a syndicate composed of J. A. Snedaker, E. L. Giroux, Dion E. Shear and other men of St. Paul, Minn.; Burlington, Ia., and Eau Claire, Wis. It is their intention to begin to open up the ore bodies. A smelter and a railway to Eureka are contemplated. Joseph Giroux, manager of the United Verde Copper Mines, will take charge.

OREGON.

Baker County.

Virgina Consolidated.—During a recent visit to Salt Lake Arthur Buckbee, manager of the Virtue Consolidated Mine, near Baker City, secured a bond on this mine, owned by David Heith and J. E. Bamberger, of Salt Lake. It adjoins the Virtue Mine.

Jackson County.

(From Our Special Correspondent.)

Kubli.—This mine, near Gold Hill, owned by the Kubli estate, has been transferred to O. N. Ramsey & Company, of Seattle, Wash.; the consideration was $40,000 cash. The new company has made one mill run and is ordering 5 more stamps.

Rogue River.—This custom mill at Gold Hill has made 4 mill runs in the last 6 days, as follows: Greyham Ledge, 6 tons, clean-up 9 oz. Assay value of concentrates, $96 per ton; tailings, $1.80. E. Ray Ledge, 4 tons, clean-up 5 oz.; value of concentrates, $120; tailings, $2.70 per ton. Wright Ledge, Willow Springs District, 2 tons, clean-up 2⅞ oz.; light concentrates; tailings, 80c. per ton. Sander & Company, Toots Creek, 8 tons. Clean not finished. O. C, Perkeypile, Goul's Creek, is delivering 15 tons, including 1 ton high-grade ochre ore, as a mill test.

Josephine County.

Gopher.—This mine on Louse Creek, near Grant's Pass, is owned by a German company. A 7-ft. vein of quartz is reported to carry $20 to $40 gold per ton. A 10-stamp mill may be installed. Mr. Lacy is superintendent.

Golden Wedge.—This mine at Galice has started the 2-stamp mill and Jacob concentrator bought of the Ashland Iron Works. Willis Kremer owns the property.

Oregon Bonanza.—Col. W. K. Rogers, one of the owners of this claim, near Grant's Pass, has been in San Francisco, Cal., to order a steam hoist, pump and other machinery.

Lane County.

Uncle Sam.—The new 5-stamp mill for this claim on Blue River, near Springfield, has been received.

PENNSYLVANIA.

Bituminous Coal.

Allegheny Coal Company.—This company, recently chartered, is said to have secured all available coal lands in the townships of East Deer, West Deer, Harmar, Indiana and Springdale, and is now preparing to operate its mines. It has a capital of $1,200,000 and now has fee simple title and leases for between 8,000 and 10,000 acres of coal-producing land, and options on more. It is said that the company has valuable holdings outside of Allegheny County also. U. C. Hatch is the secretary of the new concern, and William Bell, residing at Cheswick, is superintendent of the mines. The coal throughout that territory is part of the Freeport and Hite veins. The White Ash Coal Company has mines there, and the Pittsburg Plate Glass Company is buying up what property it can acquire.

Hecla Coal and Coke Company.—A new mining town is to be built by this company on the Byers farm, near Hecla, where the company will erect 300 coke ovens.

Saxman Coal and Coke Company.—This company has given to Col. George F. Huff, trustee, a mortgage of $1,000,000 in protection of a similar amount of 5% bonds. The company some months ago purchased over 1,000 acres of coal land in Derry Township. A railroad branch will bisect the field, connecting with the main line near Bradenville and running to a point 2½ miles northwest, where the new works will be located. A mine will be opened and possibly several hundred coke ovens will be erected. The men who own the Superior mines and coke plant will operate the new territory. Several Greensburg men are interested.

SOUTH DAKOTA.

Custer County.

(From Our Special Correspondent.)

Belt Development Company.—The shaft is down nearly 700 ft. The company is patenting a mill-site at the forks of Rapid and Castle creeks, near Mystic.

Hidden Fortune Company.—The Baltic Tunnel is in about 500 ft., following the formation, and the Brunette shaft is down 100 ft. The Doodlebug Tunnel is cutting the formation.

Lawrence County.

(From Our Special Correspondent.)

Ore Output.—The output of ore from Lawrence County at present is about 3,925 tons daily. The new cyanide plants and mills now in course of construction are expected to increase this tonnage 40%. According to an estimate of the State School of Mines, the Black Hills gold output this year will be between $12,000,000 and $13,000,000, an increase of $2,000,000 to $3,000,000.

Dakota Company.—The new cyanide plant in Deadwood has been running 3 weeks on ore from the Bertha Mine, in the Bald Mountain District, owned by John Oberto and associates, of Lead. The company will treat ore from its own mines in the Portland District.

Hidden Fortune Company.—A complete hoisting plant has been ordered from Denver for the shaft north of Lead. The shaft is down over 100 ft. The company is capitalized at 5,000,000 shares, par value $1.

Homestake Company.—The new air compressor to furnish air for the motor to take the place of the steam engine in the mines is installed. The Ellison hoist will be completed in about 60 days. The steel shaft, which has delayed the starting of the DeSmet Mill at Central City, is finished and the mill will soon start. A test run has been made of all of the new machinery in the mill. It is expected to increase the output of the Homestake Company about $25,000 per month.

Pennington County.

(From Our Special Correspondent.)

Cumberland Mining and Milling Company.—F. C. Croker, Joseph Graham and J. H. Mathies, of Hill City, have organized this company to develop the J. R. Mine, 4 miles east of Hill City. The capital stock is $1,500,000, par value $1.

Holy Terror Mining Company.—P. B. McCarty, of Rapid City, has received $24,000 in payment for a judgment against the Holy Terror Company for a ⅛ interest in the Keystone and Holy Terror No. 4 mining claims, now part of the Holy Terror Mine. The question at law was whether or not a partner could be relocated out of a claim by a partner, the courts deciding in favor of McCarty, who was relocated out by No. 2 partners several years ago. The Holy Terror Mine will now be worked full capacity. It is expected that the company will install a plant for the treatment of the refractory ore in the Keystone Mine.

Lulu.—Minneapolis men have bonded this group of claims, 5 miles east of Hill City, from Joseph McClure, of that place. A shaft will be sunk.

UTAH.

Salt Lake County.

Pioneer Consolidated Mining Company.—This company has been organized at Salt Lake, with a capital of $300,000 in $1 shares to develop the Good Luck and Pioneer Group of 7 mining claims, situated in Little Cottonwood District. Arthur Murphy is president; Edward Richards, vice-president; Frederick A. Earls, secretary; Charles E. Richards, treasurer, and H. T. Blank is the other director.

WASHINGTON.

Ferry County—Republic.

(From Our Special Correspondent.)

California.—From the east drift on the 400-ft. level a cross-cut shows 4 ft. of high-grade quartz.

El Caliph.—The company refuses to renew the lease. The lessees have 15 tons of ore at the smelter awaiting a settlement and 4 tons sacked for shipment. From the upper tunnel the pay shoot has been stoped, 100 ft. in length, to surface.

Gallatin Gold Mining Company.—This is a Spokane, Wash., company, owning 4 claims about 9 miles east of Republic. C. B. Dunning is president; L. B. Cornell, secretary, and C. V. Ewell, superintendent. The company owns 4 full claims, the Dam' If I Know, Storm King, Cutter and Yellow Jacket, adjoining the California group. The Cutter claim has a quartz vein prospected by 5 shallow incline shafts, showing 6 ft. of ore, the full width being unknown. Quartz samples assay from $4 to $6 gold per ton. A tunnel in 277 ft. has intersected a bed of serpentine, 30 or 40 ft. wide. A shaft on the Storm King shows a vein 5 ft. wide, with pockets of quartz assaying $30 to $96 in gold per ton, the balance of the quartz assaying only $1 or $2 per ton.

The Cutter Claim has 3 pits on a separate vein. The vein croppings are very wide. The Yellow Jacket, north of the Cutter, also covers 3 veins, 1 over 20 ft. wide.

WEST VIRGINIA.

Pocahontas Coal and Coke Company.—This combination of the soft coal mines of the Pocahontas District, which has been promoted by interests connected with the United States Steel Corporation, has incorporated in New Jersey with a capital stock of $40,000,000, equally divided between preferred and common shares. The new company will also have a bond issue of $9,000,000. It will take over the properties in the Flat Top Coal Land Association, and a number of smaller producers along the Norfolk & Western Railway.

The Flat Top Coal Land Association, which forms the basis of the Pocahontas Coal and Coke Company, was organized April 1st, 1887, and has an authorized capital stock of $10,000,000, including $5,000,000 4% cumulative preferred stock and $5,000,000 common, of which there are $3,714,100 and $3,714,100, respectively, outstanding. The statement of operations for the year ended December 31st, 1900, showed a net income, after deducting sinking fund, of $323,865, and a surplus, after allowing for dividends on both classes of stock, of $63,878.

WISCONSIN.

Iron—Gogebic Range.

Minnow Lake Iron Mining Company.—This company has been organized at Mellen to mine for iron ore. The company is started with a capital of $30,000, and has an option on the land east of the Guest exploration. The following officers have been elected: President, Mr. Sullivan, of Mellen; vice-president, James Guest, of Mellen; secretary-treasurer, Louis Maier, of Mellen.

WYOMING.

Carbon County.

Rambler.—There are now 17 6-horse and 2 4-horse teams hauling ore to the smelter, each 6-horse team hauling from 6 to 7 tons. The work is under the management of E. W. Hull. The traction engine and 3 large coke wagons, to haul fuel in and matte out to the railroad, arrived at Walcott recently and are ready for use. Each wagon weighs 6,000 lbs. and has a capacity of 10 tons. The engine weighs 16,000 lbs. and will haul the 3 wagons. Until about 13 bridges between Saratoga and Encampment are strengthened it is possible that the traction engine will only work from Saratoga, and teams will haul in the wagons from that point. The company is figuring on the purchase of another car-load of Schuttler's special ore wagons, to be shipped from Chicago.

FOREIGN MINING NEWS.

AFRICA.

Transvaal.

The report of the Transvaal Chamber of Mines for the month of August shows that seven companies were at work, with a total of 380 stamps running. There were 57,849 tons of rock hoisted from the mines, 47,365 tons of ore milled, 37,569 tons tailings cyanided and 2,046 tons slimes treated. The total product was: Mill, 18,875 oz.; tailings, 9,421 oz.; slimes, 179 oz.; total, 28,475 oz. fine gold, or $588,578. The average result, calculated on the tons of ore milled, was $12.34 per ton. The average ore crushed per stamp per day was 4.42 tons. The tons reported are of 2,000 lbs. each. The companies at work are the City & Suburban, the Geldenhuis Deep, the May Consolidated, the Meyer & Charlton, the Treasury and the Wemmer.

AUSTRALIA.

Tasmania.

The average number of men employed in mining during the quarter ending June 30th was 7,426, of whom 7,212 were Europeans and 214 Chinese. The dividends paid during the quarter are reported as follows: Copper mines, £27,500; gold mines, £11,600; tin mines, £18,000; silver mines, £5,516; coal mines, £1,208; total, £63,824.

CANADA.

British Columbia—Boundary District.

Col. N. E. Linsley, of Spokane, who is superintending the work of prospecting the coal measures under option to the Granby Company, has 11 men at work. A recent test of the coal made at the assay office at the smelter gave the following returns: Volatile matter, 22.9; fixed carbon, 73.3; ash, 3.7.

Similkameen Valley Coal Company.—This company, promoted by D. R. Young, of Rossland, who is associated with Nelson and Sandon men, took out necessary licenses to prospect for coal on some 7,680 acres, in all 12 claims. So far no attempt has been made to carry out the provisions of the Coal Lands Act, except to pay the necessary $50 fee per 640 acres.

EUROPE.

Spain.

Rio Tinto Company, Limited.—The following report is dated London, October 3d: "Your directors have the pleasure of presenting, as usual, a brief interim report upon the company's operations during the current year. The deliveries of pyrites on the Continent of Europe and in the United States of America are likely to reach about the same figures as last year, while the consumption in the United Kingdom may show some falling off, the alkali trade having been rather slack. The sales of non-cupreous sulphur ore, to the increased consumption of which attention was directed in the last annual report, have been on an increasing scale, and the improved demand continues. The company's refined copper has been much in demand, though at rather lower prices than in 1900, and the outturn at Cwmavon for the year promises to exceed the production of that year, while its quality is of the usual excellence. The average price of G. M. B. copper during the past nine months has been £4 13s. 5d. under that of the whole of last year. Your directors have now the pleasure to declare, out of the estimated profits of the year, a dividend for the 6 months ended June 30th last of 2s. 6d. per share, less income tax on the 5% preference shares, and an interim dividend of 35s. per share, free of income tax, on the ordinary shares, both payable on November 1st next."

MINING STOCKS.

Complete quotations will be found on pages 512 and 513 of mining stocks listed and dealt in at:

Boston.	Salt Lake.	Montreal.
Colo. Springs.	San Francisco.	London.
New York.	Spokane.	Mexico.
Philadelphia.	St. Louis,	Paris.
	Toronto.	

New York. Oct. 18.

Another bear raid, precipitated by certain Boston speculators, has been witnessed in the copper group. Early in the week the report that a large State street operator was long of 142,000 shares of Amalgamated and had suffered heavy losses set Wall street speculating in that stock. Prices declined fractionally, but trading was not prominent. As soon as Boston houses began to buy in this market the price advanced, and with increased selling, New York operators suspected a joke in the "long stock" rumor. When the price rose to $90¼ on Tuesday Amalgamated holders became freer sellers of 1,000-share lots, causing a reaction to $87¼. On Wednesday Amalgamated was hammered down to $85¾ in sales of over 95,000 shares. This trading was scattered and no one purchaser accumulated any large block. On the same day rumors were again circulated that the price of copper is likely to be cut, but inquiries among the trade show no such action. In fact, spot copper has advanced, and sellers anticipate continued good prices. Anaconda fluctuated sympathetically with Amalgamated, but with fewer sales. The extreme prices for Anaconda were $36¾@$34¾.

On curb some attention has been devoted to the copper shares. Sales of Union, of North Carolina, were reported at $4⅛@$4⅝, and of British Columbia at $14⅝@$15.

The two Utah silver stocks—Ontario and Horn Silver—showed transactions at $11@$11½ and $1.90 respectively.

In the California group Brunswick Gold was heavily dealt in at 6@12c. Standard, after a long absence, appeared with a sale at $4. The quarterly dividend of 10c. per share is expected next month. As the stock is on a 4% basis, and has paid in dividends to date more than twice its capitalization, holders are not anxious to sell. The quicksilver shares are higher, owing to the strength of the metal market.

Cripple Creek, Colo., shares were in little better demand. Elkton Consolidated, a 12% dividend stock, has reappeared on 'change, with sales at $1.60. Isabella is stronger, rising from 44c. to 48c. Golden Fleece is weaker at 33c.

Comstock shares are quiet and lower. Consolidated California & Virginia sold down to $1.75.

At the close there are comparatively few investment orders in the market, and prices are unsteady.

Boston. Oct. 16.

(From Our Special Correspondent.)

The copper share market has met with some serious setbacks during the week and in some cases prices have yielded to a point close to those reached in the panic of 1898 and 1899. Isle Royale, for instance, touched $20 then; to-day, Wednesday, it sold at $23, with considerable pressure at that. Last spring it sold above $54. In the meantime the mill has been running about 2 months, and if reports are true the copper from the rock has been very unsatisfactory, being below 2% ingot. The persistent selling from about $45 down to the present has been done mainly by a bear trader, but it now dawns upon the mind of tired holders that this trader has been delivering stock in a plentiful amount, which may have come from inside sources.

Arcadian mining, which sells at $5½, is a "busted phenom," in the vernacular. This stock sold at $95¼ in the spring of 1899, but the present selling price is the lowest on record. This was originally a Standard Oil enterprise and there is no doubt but the bulk of this stock is even now held by its original sponsors.

Liquidation in copper shares has been incessant, and of late it has been in the so-called second-class and cheap stocks. In the present state of the metal market buyers of stocks are scarce and the feeling is that copper must be reduced, notwithstanding the many assertions that it will not be. Rumors of sales of large amounts by the United Metals Selling Company cannot be confirmed. Possibly nothing has so stirred the investing public as the late Lawson episode. There are very few who believe that Mr. Lawson has lost $7,000,000 cash or on paper in copper shares. He does, however, allow that he is outside the Standard Oil coup. It was known to a few that Mr. H. H. Rogers was in Boston Wednesday, but no one could be found who had seen him. Whether his mission here is one on gas or on copper cannot be said now. They are both in a very much mixed state and need close attention. There would unquestionably be a greater feeling of security in the stock market if it were known that the market for the metal was real. A reduction in the price would certainly be reflected in the share market, but it is a question if it has not already been discounted to a large extent.

The treasuries of some of the mining companies are pretty well depleted of cash. The time for the promised dividend of Utah Consolidated has gone by and there seems hardly any likelihood of one at present. If the copper, which is now in the hands of its selling agent, could be converted into cash, stockholders would get the dividend, it is said. This applies to other companies as well.

It is understood that the Cochiti Gold Mining Company has recently struck some $20 ore in the seventh level, but contrary to the old habit of the management in telling almost everything, nothing has been said about it. A party of the directors have gone to inspect the property.

Colorado Springs. Oct. 12.

(From Our Special Correspondent.)

The stock market is about the same as last week, and if anything a trifle stronger, though there seems little or no change. A petition was circulated this week among the local brokers, asking that the 30-day trading be abolished, and this petition was signed by about 75 members, which made a majority of the brokers, and the governing committee decided to abolish the 30-day trading. This is thought to be a good thing for the market in general, as it is thought by the local brokers and others that this will induce more Eastern capital to invest in mining stocks.

It has been said that during the last few days, on a normal market, El Paso, which has been steadily advancing, with the exception of the last of this week, would have taken the rest of the market up with it, but the feeling has been so discouraging among the brokers and the demand for stocks so slight that the spirit which would cause a bull market has been entirely lacking. El Paso has gone up because it had to. There is now, however, a little better feeling, although conditions have been good all along in Cripple Creek and the brokers seem to be more hopeful of the results on the market, and the abolishment of the 30-day trading will probably cause some revival in confidence. Toward the end of the week there was, however, some manifestations of strength, particularly in the mines list, and the general tone of the trading was better.

The principal features of the week were, Anaconda, Dante, Doctor-Jack Pot, Elkton, El Paso, Gold Dollar, Isabella, Pharmacist, Pointer, Vindicator and Work, in the mines; Beacon Hill, Ajax, Calera, Central, Midway, Missouri, Mollie Dwyer, Morning Star, Pappoose and Sedan, in the preferred prospects; Aola, Golden Dale, Gold Knob, Helen B., Kitty G., Leon, Shannon, Silver State and Zoe, in the prospects; Acacia, Blue Bell, Gold & Globe, Gould & Reno, in the unclassified list.

Anaconda has shown some activity, although it has declined somewhat, but what else could be expected, considering the general tone of the market? It opened at 27c., declined to 26½c. and closed at 27c., with light sales. Dante has been active this week, opening at 4c. and advancing to 4¾c., then declining, and closed at 4c. bid, with 4½c. asked, under fair trading. Doctor-Jack Pot has shown some activity, and also strength; it opened at 52½c., then advanced and closed at 55½c., under light trading. Elkton opened at $1.71 asked, then declined to $1.65, and closed at $1.65 bid, with $1.68 asked, under light sales. El Paso, the sensation of the last few weeks, has been very active, both advancing and declining; it opened at 63½c. and closed with good sales. Gold Dollar opened at 18⅜c., then declined to 17⅞c., and closed, thus showing some activity, with good sales. Isabella has shown some activity this week, although not as much as it has shown in the last few weeks; it opened at 40⅝c., then advanced and closed at 43c., with some sales at 43½c.; buyer 30. The sales on this stock have been fairly good. Pharmacist has shown some activity this week, although it declined; it opened at 6½c. bid, with 7¾c. asked, then declined and closed at 6⅝c. bid, with 6⅞c. asked, under light trading.

Sedan, a sensation of a few months ago, has shown considerable activity; it opened at 4⅛c., then advanced to 6c., and declined and closed at 5c., with very good sales. Zoe, a late sensation, opened at 2⅜c., then advanced to 2¾c., then declined and closed at 2⅝c., with some sales. Acacia has shown some activity; it opened at 15¾c., then declined and closed at 15⅝c., under fair sales. Gould opened at 13½c., then advanced and closed at 14⅛c., with some trading. Reno opened at 2½c. asked, then declined and closed at 1½c. bid, with 2c. asked, with few sales.

The total amount of sales for this week is 2,934,449 shares, with a cash value of $300,406. The sales are much heavier than last week, but the cash value is somewhat lighter.

San Francisco. Oct. 11.

(From Our Special Correspondent.)

The market has been generally weak, and prices are rather lower. Business has been smaller than usual and stocks in light demand. An improvement is looked for when the pending crop of assessments is out of the way, which will be well toward the end of October.

Some quotations noted are: Consolidated California & Virginia, $1.65; Ophir, 68@69c.; Confidence, 65c.; Mexican, 15c.; Sierra Nevada, 13@14c.; Potosi, 7c.; Chollar, 6c. Standard Consolidated was $3.90 bid and $4.05 asked, with no sales.

The annual meeting of the Mayflower Grand Mining Company has been called for October 21st.

On the Producers' Oil Exchange business was somewhat less active and fewer buyers were on hand. Prices were fairly maintained, however, and were strong at the close. Some quotations noted are: Hanford, $103@$104; Peerless, $5.50; Home, $3.40; Twenty-eight, $1.65; Sterling, $1.40@$1.45; Aztec, $1.15; Caribou, 75c.; Reed Crude, 33c.; Giant, 31c.; Monarch, 23c.; Junction, 19@21c.; Lion, 9c. Peerless, Junction, Reed Crude and Caribou were the favorites.

London. Oct. 8.

(From Our Special Correspondent.)

The mining market has been very shaky all week, chiefly on account of a slump in West Africans. The reports of trial borings that come to hand are not at all encouraging and the gold contents average only ½ oz., a figure far below what was promised in prospectuses. It is doubtful whether such ore could be worked at a profit under conditions prevalent in that part of the world. Consequently the professional element are in many cases desirous of being rid of their commitments and are selling out wherever possible. South Africans have been depressed by the continued hostilities and British Columbians have been weakened by realizations. The only stock that has shown any strength is De Beers diamond. There continues to be a good deal of buying of these shares and there has been a fresh interest in them created this week by the definite news of a proposed rearrangement of capital. The full details of the scheme are not yet settled, but it is intended to have both preference and ordinary shares instead of ordinary alone as before. The scheme appears to be much the same as that adopted by Rio Tinto a few years ago.

The movement in copper mining shares has not been very definite this week and has been confined to variations, due to adjustments of speculative accounts. Rio Tintos £5 ordinary are about £46, which is £2 or £3 lower than two weeks ago and from £12 to £14 lower than the best prices at the beginning of the year. The company has just announced an interim dividend at the rate of 35% on the ordinary shares. This compares with 40% interim dividend a year ago and is the same as the interim dividend of two years ago. The announcement has had no special effect on the shares, as it was about what was expected. The fall in quotations is entirely due to the uncertainty as to the future of the copper market and has nothing to do with the results of the current year.

For some time now the Montana Mining Company, working the celebrated Drumlummon Mine, has suspended operations, as the lode had ceased to pay, and during the past year or so the directors have been on the lookout for a new property. The company has a large sum of cash in hand and an excellent plant, so we may expect shortly to hear that a new property has been acquired. In fact, rumors to this effect are being circulated at present, though the directors make no announcement on the subject. The shares are being picked up by some one who thinks them good speculations, acting presumably on the rumors, and the quotation has stiffened a little.

The Mountain Copper Company, Limited, in Shasta County, California, has just paid an interim dividend at the rate of 5%. For some time the company, knowing that its deposits were limited, has been examining adjoining properties, but negotiations to acquire such properties have fallen through and it is not intended to follow up this policy. Borings have been made on parts of the company's property hitherto unexplored, but no definite results have been arrived at so far. It is the intention of the directors to pay back to shareholders a large sum that is now in the form of a reserve fund and to reduce the capital of the company by this amount. At the present time there is £250,000 reserve fund invested in trust securities and probably there will be £150,000 placed to this account out of the current year's profits. The total capital is £1,250,000, but with the present reserves in hand it would not be practicable to repay the whole of this capital. If, however, shareholders are content with dividends at 5% per annum it would be possible to repay a very large proportion of the capital.

The principal creditors of the London & Globe Finance Corporation are becoming restive under the voluntary liquidation scheme and are now petitioning the court for a compulsory winding up. It will be remembered that this was the first of the Whitaker Wright companies to collapse at the beginning of the current year. At the time the rottenness of the whole group was not realized, so the shareholders consented to a voluntary liquidation. Since then there have been plenty of revelations in connection with the collapse of other companies of the group, so it has been deemed advisable to try to have the London & Globe placed on the same footing and the whole history disclosed. The voluntary liquidators are necessarily under the influence of the old directors and controllers and are not in an independent position such as is enjoyed by the officials in bankruptcy. The Whitaker Wright group has been in the background all summer, but now that the courts are reopening we shall hear more of it again.

An English company working an American mine that has had a uniformly unfortunate career is the Mammoth Collins Gold Mines, Limited. This company was originally formed in 1889 to acquire the Mammoth Group in Pinal County, Arizona, and afterwards, in 1895, the Collins Group adjoining were acquired. Unfortunately there are debentures held by the vendor and these have been the cause of much worry during the past 2 or 3 years, and all other troubles, which were many, have been quiite eclipsed by those caused by the debenture holder. A few months ago the debenture holder foreclosed and strong measures had to be taken by the directors to preserve the property. The directors are now trying to raise about £1,000 to save the situation and restore the property to the company free from incumbrance. It is a very unfortunate position for English shareholders who have time and again subscribed capital to put the property in order and provide plant. It is a bad principle anyway to pay a vendor in debentures, especially when the vendor is a local resident and the shareholders thousands of miles away. If it were not for these financial arrangements and the disinclination of the directors to appoint a first-class manager at a handsome salary the properties would pay shareholders well enough, for there is no doubt that the properties are valuable and contain plenty of low to medium-grade ore.

Paris. Sept. 29.

(From Our Special Correspondent.)

The mining stock market has shown more activity in some directions, but in most departments remains quiet.

The copper stocks have remained active. The fluctuations in prices in London have not really affected the stock quotations. The general public may think so, but not the speculators, who are most concerned in the movement. The whole matter has turned on the new movement in Rio Tintos, which seems to have puzzled London a little. It has been managed from Paris chiefly, with the active aid of Berlin. Some people say that New York—which is now a considerable holder of Rio Tintos—has been concerned also, and this is quite probable. The other copper stocks have been affected chiefly by sympathy with the leader.

Connected to some degree with these operations is the movement in De Beers stock, which has been very active. This also is a Paris operation, with which London has had very little to do.

The metallurgical shares have been rather depressed, under the influence of the smaller dividends of several of the companies. There is nothing new in the situation.

The Russian group continues to lose ground generally, and it looks very much as if many of these stocks would be soon as much below their real value as they were recently above it. Business in the Empire does not seem to recover; but in spite of this there is solid value in these stocks, and the iron industry in Russia has a great future before it.

The Societe des Metaux has declared a dividend of 25 fr. The last payment was 22.50 fr.

The foreign merchandise trade of France for the 8 months ending August 31st is reported by the Ministry of Commerce as below:

	1900. Francs.	1901. Francs.
Imports	3,198,789,000	3,213,899,000
Exports	2,672,253,000	2,743,128,000
Excess, imports	526,536,000	470,771,000

The total imports of gold and silver this year were 365,068,000 fr., against 441,246,000 fr. in the corresponding period of 1900. The exports were

149,273,000 fr., which compares with 176,976,000 fr. last year.

The South African mining stocks remain dead. There are reports that some more mines are to be started up, but an addition of 50 or 100 stamps to the working mills will make no real difference. Until a general start is possible we can expect no change in stocks.

We are almost at the end of the second year of the war, and it looks as if a third year were quite possible. It is not a cheerful prospect for investors in Witwatersrand companies.

A recent colonial report says that 10 concessions have been granted for the working of iron ore in Madagascar. On 5 of these no work has been done; on the other 5 prospecting and other preliminary operations have been carried on, but no report has yet been made of ore taken out. For the present charcoal will have to be used in any metallurgical operations undertaken, as there is a great abundance of wood, but no mineral fuel is available. The natives have worked iron in primitive furnaces and forges for many years. The iron ores of Madagascar are of excellent quality and seem to be abundant in quantity; so that they may be of importance hereafter. Azote.

ANNUAL MEETINGS.

Name of Co.	L'cation.	Date.	Place of Meeting.
*Am. Alkali	Mich.	Oct. 30	Philadelphia.
Central Eureka	Cal.	Oct. 24	San Francisco Cal.
Con., Cal. & Va.	Nev.	Oct. 21	San Francisco, Cal.
Fanny Rawlings.	Colo.	Nov. 4	Colorado Sp'gs, Colo.
Great Western, q	Cal	Nov 6	San Francisco, Cal.
*Magnolia.	Utah.	Oct. 22	Salt Lake City, Utah.
Siskiyon Con.	Cal.	Nov. 4	San Francisco, Cal.

*Special.

ASSESSMENTS.

Name of Company.	Location.	No	Delinq.	Sale.	Amt.
					$
Albion	Utah	2	Oct. 11	Oct. 29	.05
Allouez	Mich	...	Oct. 21	...	3.00
Andes	Nev.	54	Sept. 30	Oct. 21	.05
Badger	Ore.	4	Nov. 6	Nov. 30	.05
Bullion	Nev.	59	Oct. 24	Nov. 14	.03
California Dredging	Cal.	...	Oct. 21	.....	10.00
Challenge Con	Nev.	32	Oct. 21	Nov. 12	.05
Confidence	Nev.	37	Oct. 2	Oct. 23	.10
Crown Point	Nev.	83	Oct. 9	Oct. 30	.05
Gold Hill	Cal.	...	Oct. 25	.....	.25
Goleta Con	Cal.	3	Oct. 30	Nov. 28	.10
Gonyon	Utah	...	Nov. 1	Nov. 22	.00¼
Gould & Curry	Nev.	56	Oct. 22	Nov. 11	.10
Little Chief	Utah	9	Oct 5	Oct. 23	.01
Marina Marsicano	Cal.	25	Oct. 14	Nov. 4	.01
Mariposa Com'l & Mg	Cal	24	Oct. 21	Nov. 11	0.00
Nugget Placer	Cal	1	Oct. 14	Nov. 7	.10
Osceola Con	Cal.	12	Oct. 5	Oct. 28	.01
Potosi	Nev.	60	Oct. 1	Oct. 22	.05
Savage	Nev.	104	Oct. 8	Oct 29	.10
Sharp	Utah	4	Nov. 11	Dec. 2	.00¼
Tanana	Cal.	...	Nov. 4	.....	.10
Ukiah Oil	Cal.	1	Oct. 11	Oct. 23	.02
Union Con	Nev.	62	Oct. 10	Oct. 29	.10
Willietta	Cal.	2	Sept. 30	Oct. 21	.01
Yuba Con	Cal.	3	Sept. 24	Oct. 24	.03
Yellow Jacket	Nev.	9	Oct. 22	Nov. 27	.10

DIVIDENDS.

Name of Company.	Latest Dividend. Date.	Per share.	Total.	Total to date.
Aberdeen Cop., N. M.	Nov. 4	$1.00	$32,175	$32,175
†Alaska-Treadwell	Oct. 28	.37½	75,000	4,820,000
‡Allis-Chalmers, pf	Nov. 1	1.75	284,375	568,750
†Amalgamated Cop.	Oct. 28	1.50	2,308,319	15,809,491
§Anaconda Copper	Oct. 25	1.25	1,500,000	20.850,000
†Calumet&Hec.,Mich.	Oct. 31	15 00	1,500,000	77,350,000
†Central Oil. Los Ang.	Oct. 25	.03	15,817	136.247
†Con Mercur, Utah	Nov. 1	.12½	125.000	485,000
*Consolidated, Colo.	Oct. 25	01	19,000	114 000
*Gold Coin, Colo	Oct. 25	.03	30,000	909,000
*Homestake, S. Dak.	Oct. 25	25	42,500	10 453,750
Homestake, extra	Oct. 25	.25	52,500	.....
*Ingham Con., Colo.	Oct. 28	.00¼	3,399	37,389
†Int l Steam Pump, pf	Nov. 1	1.50	132,750	1,194,750
*New L'dville, Home. Colo.	Oct. 21	.00⅝	12,500	212,500
*New Zealand. Colo.	Oct. 25	.01	7,650	38,250
*N.Y & Hond.Rosario	Oct. 19	.10	15.000	1,625,000
N.Y. & Hond. Ros., ex.	Oct. 19	.10	15,000	.....
Oil City Petroleum,Cal	Oct. 1	.00½	2,500	12,500
*Pacific Coast Borax.	Oct. 30	1.00	19,000	952,500
†Parrot Copper	Oct. 28	1.00	229,850	5,638,000
†Phil. Nat. Gas, com.	Oct. 21	.75	221,282	1,585,829
†Pittsburg Coal, pf	Oct. 25	1 75	560,000	4,480,000
Rambler-Cariboo,B.C.	Oct. 30	.01	12 500	130 000
*Standard, Ida	Oct. 23	.05	25,000	2,415,000
Straitons Independ'e.	Oct. 24	.24	240,901	3.552,856
†Texas & Pacific Coal	Oct. 25	1.50	30,000	1,920,000
Town Topics, Colo.	Nov. 1	.00½	5,000	15,000
*U.S Crude Oil, Cal	Oct. 15	.02	2.000	23.220
†U. S. Steel, com	Dec. 20	1.00	5,082,347	10.143,462
†U. S. Steel. prefered.	Nov. 6	1 75	8,929,049	17,824.962
†Vindicator, Colo.	Oct. 25	.03	33,000	661,000
Vindicator, extra.	Oct. 25	.02	22,000	.....
§Westmoreland Coal.	Oct. 15	1.50	375,000	6,750,000
West Shore Oil, Cal.	Oct. 31	.05	5,000	10,000

*Monthly. †Quarterly. §Semi-Annual.

COAL TRADE REVIEW.

Anthracite.

New York. Oct. 18.

The general condition of the anthracite trade continues excellent and the outlook for the winter is extremely favorable. There is now but little chance of any serious labor troubles at the mines before next spring, and the production of coal is likely to be heavy all winter. The output for September is officially estimated at about 4,000,000 tons, and the output for October is likely to exceed that figure. The production for the year to date is nearly 5,000,000 tons in excess of that for the corresponding period last year, which was 34,202,000 tons.

Shipments of anthracite to Europe continue. These are of importance chiefly from their novelty. The total movement is not likely to be large, as shipments are in part dependent on a very favorable freight rate, which can scarcely be expected to rule long. However, the amounts shipped are in excess of any similar movement in the history of the trade, but it is, to say the least, rather remarkable that anthracite should be going abroad when prices in the domestic market are so firm and demand so good.

In Lake Superior territory the movement of coal up the lakes has not been maintained at the rate expected, and there is renewed talk of a shortage before next spring. However, the movement through the Sault to October 1st this year was 529,788 tons, compared with 422,325 tons in the corresponding period last year. In Chicago territory receipts by lake are more liberal and the outlook for an adequate supply on docks by the close of navigation has improved. Receipts of rail coal are insufficient to supply local shippers and do not seem likely to increase materially, owing to the general car famine. Retail buying awaits cold weather. At lower lake ports business is in good shape. Shipments up the lakes from Buffalo have been heavy. Along the Atlantic seaboard there is a very fair movement of coal. Most of the shoal-water ports have their needs for the winter supplied. Retail trade at Philadelphia, New York and Boston is as good as should be expected.

The October prices for free-burning white ash coal f. o. b. New York Harbor shipping ports are: Broken, $4; egg, $4.25; stove and nut, $4.50.

Bituminous.

The demand for coal in the Atlantic seaboard bituminous trade continues to increase. It is reported that Norfolk & Western shippers are the only ones able to deliver all the coal called for. All producers are making heavy shipments, as is shown by the statement that on one day arrivals at the wharves of one company beyond Cape Cod amounted to 90,000 tons. Consumers are being told that their applications will be shipped in turn as coal arrives. Some speculators are talking of jumping prices 40 or 50c. per ton. They have not done this yet, but with a continuance of present conditions such a jump is not improbable. Car supply still troubles most shippers; it ranges from 50% to 75% of the total supply wanted.

The far East continues to call for coal, and is receiving large amounts. Along Long Island Sound the demand is very heavy, but consumers in that territory are receiving little comfort, as they gave slight attention to bituminous business early in the season when the situation was much easier. New York Harbor trade is active. All-rail demand is heavy, and producers are cutting down the amounts called for by consumers.

Transportation from mines to tidewater is slow and irregular. Car supply at the mines continues short. In the coastwise vessel market, vessels are scarcer and in some demand. We quote current freight rates from Philadelphia as follows: Providence, New Bedford and the Sound, 60c.; Boston, Salem and Portland, 70c.; Wareham and Newburyport, 85c.; Lynn, 80c.; Portsmouth and Bath, 75c.; Bangor, 90c.; Gardner, 80c., and towages; Saco, $1 and towages; Dover, $1.15 and towages. Rates from the farther lower ports are 10c. above these figures.

Birmingham. Oct. 14.

(From Our Special Correspondent.)

Very little change is noted in coal market conditions. Steam coal is yet sluggish, while domestic coal is finding a ready demand. Prices maintain the same position. There is fairly good work at all the mines, everything considered, and the railroads are having some little trouble supplying the full demand for cars.

The railroads are making preparations looking to the construction of branch lines to various points where development in the way of opening new mines is promised. Some 20 miles of new railroad branch lines are desired and several new mines will be opened if the work is done. President M. H. Smith, of the Louisville & Nashville; W. W. Finley, vice-president of the Southern Railway, and other officials were in the Birmingham District during the past week.

Cleveland. Oct. 16.

(From Our Special Correspondent.)

The lake coal shipers started into this week with an appreciable change in conditions surrounding the supply of coal. Some of the big shippers, having importuned the railroads for assistance in getting enough coal to the lakes to fill contracts in the Northwest, have received in response a much better supply of cars. The movement up the lakes has been considerably heavier so far this week, therefore, than it has been for a couple of weeks. The one annoying feature is that there is no promise of permanency in the relief and, indeed, the outlook is that the spurt will end with the present week, as the cars as soon as emptied are turned over to the ore shippers to be sent South to the furnaces. The one assurance which the shippers have is that it is in the power of the railroads to prevent disaster on the season's business if they can be persuaded to lend aid to the shippers. It is conceded, however, that this aid is to be hard to invoke and some of the shippers may only fill their contracts at the expense of much beseeching at the doors of the railroads and by paying the better rates during the fall which the vesel owners will demand as the season gets shorter. At present no change in the carrying rates has been made. The rate to Duluth is 35c., and to Milwaukee from Ohio ports is 60c. The movement of domestic coal is now quite heavy and the sales during the last few weeks have been quite encouraging to the trade.

Pittsburg. Oct. 16.

(From Our Special Correspondent.)

Coal.—The coal trade in this district never has been as good as at the present time. Despite the fact that all of its mines are running full, the Pittsburg Coal Company, the railroad coal combination, it is believed, will be unable to fill all of its contracts in the Northwest. This will be partly due to the scarcity of railroad cars. The independent companies also have some large contracts to fill. The Monongahela River Consolidated Coal and Coke Company, the river coal combine, denies the report that coal wil be scarce in the lower markets unless there is a rise in the rivers before the close of the month. This company has a large stock of coal on hand in Cincinnati and Louisville and there is said to be sufficient coal afloat at New Orleans to supply the demand for several months. The supply of coal in Cincinnati at this time last year was almost exhausted. The present year has been an exceptionally good one for navigation and the company has been able to ship about 85,000,000 bu. to the Southern ports. The price of coal has been advanced at Cincinnati from $2.75 to $3 a ton.

Connellsville Coke.—There was a falling off in the production, but a gain in shipments. Prices are firmer this week, outside coke having been advanced about 20c. a ton, foundry being quoted at $2.25@$2.35 and furnace at $1.60. Standard Connellsville coke is firm at $2 for furnace and $2.50@$2.75 for foundry. Of the 21,733 ovens in the region 19,473 are active and 2,260 are idle. The production was 218,118 tons, a decrease of 5,267 tons, compared with the previous week. The shipments for the week aggregated 10,900 cars, distributed as follows: To Pittsburg and river tipples, 3,840 cars; to points west of Pittsburg, 4,911 cars; to points east of Connellsville, 2,149 cars. This was an increase of 451 cars over the previous week.

Foreign Coal Trade. Oct. 18.

A British consular report states that in 1900 the Kohlen Depot Algier Gesellschaft, which is composed of directors of German steamship lines, was founded. It is formed exclusively for supplying German and Austro-Hungarian owners with Welsh coal, of which it is importing between 40,000 and 50,000 tons into Algiers in the course of the year 1901. The result has been that German boats now coal at Algiers instead of at Malta, usually completing their cargo at the same time with vegetable fiber, cork, wood, skins, etc., at low freight for carriage to Germany. German trade has considerably benefited thereby.

The same report says: "An office has also been established in Algiers under the designation of the American Coal Export Company. It has not as yet commenced, and so far has no stock of coal in its hands. It is worthy of mention, however, in view of the great scheme now on foot for establishing depots for American coal in the Mediterranean. The ultimate success of such a project with regard to Algiers appears problematic, for though three cargoes of American coal were brought over last autumn, and one of them, of New River coal, was found extremely satisfactory for steamships, yet the price (27s. 6d. on the quay) could not permit, except during times of strike, of competition with Welsh coal, which was sold last year at a normal contract price of 25s., rising to 38s., during the strike in the Welsh collieries. It would appear, therefore, that apart from a very powerful American combination lowering freight to a considerable extent, the British coal import is unlikely to suffer seriously. The import of British and other coal in Algiers in 1900 amounted to 50,464 tons."

Imports of coal and coke into Germany for

the eight months ending August 31st were as follows, in metric tons:

	1900.	1901.	Changes.
Great Britain	3,873,985	3,418,516	D. 455,469
Austria	317,865	322,799	I. 4,934
Belgium	409,828	282,147	D. 127,681
Other countries	122,920	84,918	D. 38,002
Total coal	4,714,598	4,108,380	D. 606,218
Brown coal (lignite)	4,737,572	5,390,170	I. 652,598
Coke	362,020	271,242	D. 90,778
Total	9,814,190	9,769,792	D. 44,398

The brown coal was all from Austria. The coke was from Belgium and France chiefly. Exports were more than double the imports; this year they amounted to 9,799,499 tons coal, 14,649 tons brown coal and 1,435,169 tons coke.

Messrs. Hull, Blyth & Company, of London and Cardiff, report, under date of October 5th, that the Cardiff market has shown signs of weakness, prices all round having declined. They are nominally as follows: Best Welsh steam coal, $4.32@$4.56; seconds, $4.08; thirds, $3.72; dry coals, $3.48; best Monmouthshire, $3.60@$3.72; seconds, $3.24@$3.36; best small steam coal, $2.28; seconds, $1.92; other sorts, $1.56.

The above prices for Cardiff coals are all f. o. b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f. o. b. Newport, exclusive of wharfage, but inclusive of export duty, and are for cash in 30 days, less 2½% discount.

Freights still continue very weak, Mediterranean being, if anything easier than last week. Some rates from Cardiff are: Algiers, $1.20; Marseilles, $1.25; Genoa, $1.32; Naples, $1.32; Port Said, $1.26; Singapore, $3.60; Las Palmas, $1.44; St. Vincent, $1.62; Rio Janeiro, $3.12; Santos, $3.36; Buenos Ayres, $3.24.

Shipments aggregating 10,000 tons of anthracite coal are reported made this week from Philadelphia to Stettin, Germany, by the Reading Company. Should the results be favorable other shipments of this kind will follow.

Exports of coal from New York in September were 9,379 tons anthracite and 3,531 tons bituminous; total, 12,910 tons. Of the anthracite 4,685 tons went to Nova Scotia, 2,330 tons to Gibraltar and 1,798 tons to Belgium. The bituminous exports included 2,315 tons to Italy and 6,995 tons to France. There were also 6 tons of coke shipped to the West Indies.

Ocean freight charters continue easy, and this week one has been booked from Philadelphia to Rouen, France, at 9s. ($2.16).

SLATE TRADE REVIEW.

New York. Oct. 18.

The list of prices per square of No. 1 slate, standard brand, f. o. b. at quarries in car-load lots, is given below:

Size, inches	Monson or Br'nville.	Bangor.	Bangor Ribbon.	Alb'n or Jackson Bangor.	Chap'n Keyst'ne	Peach Bottom.	Sea Gr'n	Unfad'g Green.	Red.
	$	$	$	$	$	$	$	$	$
14 x 14	6.50	3.50	3.00	3.00		5.10	3.00	..	.....
14 x 12	6.60	3.50	3.00	3.00	3 80	5.25	3.00	3.75	.....
12 x 12	6.60	3.50	3.25	3.00	... .	5.25	3.00	3.75	.....
12 x 11	6.50	3.75	3.25	3.00	4.00	5.25	3.00	4.00	.....
20 x 12	6 90	3.75	.....	3 00	.. .	5.25	3.00	3.75	.....
20 x 11	6.80	.....	.....	3 25	.	5.25	3.00	.....	.....
20 x 10	6.80	4.25	3.50	3.25	4.00	5.35	3.00	4.25	10.50
18 x 12	6.80	3.75	....	3.00	.....	5.25	3.00	3.50	.....
18 x 11	7.00	.....	.....	.....	.....	...	3.00	3.75	.....
18 x 10	7.00	4.25	3.50	3.25	4.00	5.35	3.00	4.00	10.50
18 x 9	7.00	4.50	3.50	3.25	4.00	5.35	3.00	4 25	10.50
16 x 12	6.80	3.75	....	3.00	.....	.....	2.90	3.50	....
16 x 10	7.00	4.00	3.50	3.25	4.00	5 25	2.90	4.00	10.50
16 x 9	7.00	4.25	.....	3.25	4 00	5.35	2.90	4.25	10.50
16 x 8	7.00	4.50	3.50	3.25	4.25	5.35	2.90	4.25	10.50
14 x 10	6 60	3.75	3.25	3.00	.....	5 25	2.70	3.75	10.50
14 x 9	6.50	.....	.....	.....	.....	...	2.70	3.75	10.50
14 x 8	6 60	3.75	3.25	3.00	4.00	5.10	2.70	4.25	10.50
14 x 7	6.40	3.75	3.25	3.00	3.75	5.10	2.50	4.25	10.50
12 x 10	5.75	...	.	....	.. .	...	2.50	3.25	....
12 x 9	5.60	...	.....	.....	... .	....	2.50	3.25	.....
12 x 8	5.50	3.50	.....	2.85	.....	4.85	2.50	3.50	9.00
12 x 7	5.00	3.25	.....	2.85	3 25	4.85	4.00	3.50	9.00
12 x 6	4.80	3.25	.	2.85	3.25	4.75	2.00	3.50	8.50

A square of slate is 100 sq. ft. as laid on the roof.

Trade is moderately active, and dealers look forward to good prices for some time to come.

Export business showed an improvement in September over the previous month. The movement from New York alone was valued at $33,770, bringing the total exports to September 30th to $286,632, as compared with $326,097 in the corresponding period last year, showing a falling off of $39,465, or 12%. The roofing slate shipments this year are estimated at 50,390 squares, as against 50,250 squares in 1900. Great Britain, Australia and Denmark were the principal markets for our roofing slate. The mill stock went largely to the Scandinavian Peninsula, India and Australia.

CHEMICALS AND MINERALS.

New York. Oct. 18.

Heavy Chemicals.—Demand for alkali is active, as the glass works are drawing freely on their contracts. Caustic is also in better request, and owing to small stocks in makers' hands prices are strong. Bicarb. soda and sal soda find a larger sale to home consumers. Bleaching powder continues firm, as spot is in limited supply. Chlorate of potash is in fair demand at unchanged prices.

Prices per 100 lbs. are as below:

Articles.	Domestic. F.o.b. Works.	Domestic. In New York	Foreign. In New York.
Alkali 58%.	77½@82½	....	.....
" 48%.	82¼@87½	....	....
Caustic Soda, high test....	$1.90@$1.92½	.....	$2.25@$2.50
powd. 60%.	....	$2.75	.....
70@74%.	.....	2.85@3.00	....
98%.	....	3.25	3.75@4.00
Sal.Soda.....	.55	.65	.65@.67½
" " conc.	1.25@1.50	....	1.75
Bicarb. Soda.	.95@1.00	.....	1.37½@1.75
" " extra	3.25@3.50	.....	.....
Bleach. Pdr., Eng. prime.	.....	....	2.10@ 2.25
other brands	.. ..	....	1.90@ 2.00
Chl. Pot. cryst	....	8.25@8.37½	9.75@10.00
" powd.	.. ..	8.37½@8.62½	10.25@10.75

Acids.—Contract deliveries are better in most acids. Oxalic, however, suffers from keen competition, resulting in sales for next year's delivery at $5 per 100 lbs. It is reported that a large oxalic acid factory will be built at Sheboygan, Mich. The raw material to be used is sawdust, which can be had cheaply in the neighboring lumber regions. The venture is said to be the first of its kind in this country. Chicago people are interested. Blue vitriol moves moderately on export orders. In September the exports from New York aggregated 104,533 lbs., making a total of 37,244,791 lbs. for the 9 months. Of this total Italy received 27,499,645 lbs., or 74%; Austria 3,450,856 lbs., or 9%; France 1,857,731 lbs., or 5%, and Holland 1,255,121 lbs., or 3%. Fairly large quantities were also sent to Portugal, Belgium and Argentina.

Quotations are per 100 lbs., as below, unless otherwise specified, for large lots in carboys or bulk (in tank cars), delivered in New York and vicinity:

Acetic	$1.80	Nitric, 42°	$4.37½
Blue Vitriol	4.50@4.75	Oxalic	5.25@5.87½
Muriatic, 18°	1.25	Sulphuric, 50° bulk, ton	12.00@14.00
Muriatic, 20°	1.37½	Sulphuric, 60°	.90
Muriatic, 22°	1.50	" bulk, ton	16.00@18.00
Nitric, 36°	3.62½	Sulphuric, 66°.	1.10
Nitric, 38°	3.87½	" bulk, ton	19.00@21 00
Nitric, 40°	4.12½		

Brimstone.—The firmness in prices abroad is reflected here, and holders of spot ask $24@$24.25 per ton for best unmixed seconds and $20.50@$21 for thirds. Shipments are also higher at $23@$23.25 for best unmixed seconds and $20@$20.25 for thirds. The operations of the Anglo-Sicilian Sulphur Company are financially satisfactory, as it now has a better control of the industry than at the time the first producers' agreement was signed.

Pyrites.—Consumption keeps up and prices are well maintained. There is an increased burning of non-cupreous ores by sulphuric acid makers who supply the fertilizer trade. We quote, per ton, as follows: Mineral City, Va., lump ore, $4.90 per long ton, and fines, 10c. per unit; Charlemont, Mass., lump, $5, and fines, $4.75. Spanish pyrites, 12@14c. per unit delivered exship New York and other Atlantic ports. Spanish pyrites contain from 46@51% of sulphur; American from 42@44%.

Sulphate of Ammonia.—Gas liquor is in moderate supply for immediate shipment, and holders ask $2.85 per 100 lbs., while cargoes to arrive are obtainable at $2.80.

Nitrate of Soda.—The market is weak, owing to the accumulation of nitrate in the consuming territory. Spot is obtainable at a shade less than $1.90 per 100 lbs., while future shipments are nominal at $1.92½@$1.95, according to position. Recent arrivals were the bark "Eivion" with 12,251 bags, and the "Clydesdale," 19,616 bags, at New York; "Corydon," 39,000 bags, of which 15,000 bags were for Baltimore and 24,000 bags for New York; and "Thetis," 15,000 bags at Hampton Roads, ordered to Philadelphia, making a grand total of 73,616 bags. Next week the "Loch Finals," with 24,000 bags, and the "Dart," with 21,800 bags, are due at New York. Ocean freights from Chile are decidedly weaker, but the price of nitrate is firm, owing to the curtailment of exports. Abroad the nitrate market is dull, and it is feared the high prices ruling will affect consumption.

Briefly, the European statistical situation in the 9 months ending September 30th is as below, in long tons:

	1900.	1901.	Changes.	P. C.
Imports	798,610	959,630	I. 161,020	16.8
Deliveries	981,380	1,038,060	I. 56,680	5.5
Excess, deliveries	182,770	78,430	D. 104,340	57.1
Vis. supply Oct. 1st	414,570	377,240	D. 37,330	9.0

It is noteworthy that the difference between deliveries and imports is greater than last year, owing partly to a weaker market in Germany, a leading consuming territory. It is stated that Hamburg sellers are willing to take next spring orders at 5s. a ton less than recent top prices. Advices from Chile show that early 1902 orders have been booked around 6s. 3d. ($1.50) per qtl., steamer terms. Ocean freights on time charters are about 22s. 6d. ($5.40 per ton).

Concerning the Chilean market, Messrs. Jackson Brothers, of Valparaiso, write us under date of September 7th that demand has continued throughout the fortnight, although not to the extent of the previous one, owing perhaps to the higher pretensions of sellers. The market opened with sales of 95% at 6s. 6½d. alongside, and on September 4th 6s. 7d. was paid for deliveries up to the end of this year; since then 6s. 7¼d.@6s. 7½d. have been paid. These prices, however, with present freights of 28s. 3d., are far above European quotations. Monthly parcels of 95% over the whole of 1902 were disposed of at 6s. 3½d. and over April-December only at 6s. 3d., both steamer terms. For the refined quality comparatively little interest has been shown, a small business being effected for the United States at 6s. 9d.@6s. 10d. alongside. The exports for the first 8 months of this year have been 16,427,000 qtls. as against 15,849,000 qtls. during the same period of 1900. We quote 95% September-December 6s. 7d.; January-March, 6s. 5½d.; April-December, 6s. 3½d., and 96%, September-December, 6s. 9½d., and January-March, 6s. 8½d., all ordinary terms sellers. The price of 6s. 7d. with an all-round freight of 28s. 3d. stands in 8s. 9d. per cwt., net cost and freight. without purchasing commission. Sales for the fortnight ended September 7th were 657,000 qtls.

Phosphates. — The community - of - interest - scheme in the phosphate industry is still being debated. Leading exporters are prominent among the projectors. For some time there has been a feeling of unrest in producing centers, owing to keen competition following an increased demand for American phosphates in the foreign superphosphate manufacturing countries. This foreign trade is of great importance, since it buys twice as much phosphates as are consumed in America. Moreover, we furnish Europe with fully 40% of its annual supply of phosphates. Our producers have been considering the idea of consolidating for some time. In Tennessee options have already been taken on a number of important properties, and it is believed the time is not far distant when the industry in this State will be under close control. Florida producers are still somewhat backward, but it is expected that next month a tentative agreement will be decided upon. The industry in South Carolina is operating harmoniously, as the mines are controlled by the Southern Fertilizer trust.

Work in mining centers is progressing satisfactorily as demand is improving. A curtailment in stocks in Florida has been occasioned by the heavy rains which interfered with mining, and it is estimated that only about 75,000 tons of hard rock is on the dumps. This is a smaller quantity than has been carried for several years past. Exports of high-grade rock in September from Fernandina were little more than one-half those reported in August. For the 9 months ending September 30th the exports amounted to 153,284 tons, which compares with 151,187 tons last year; showing an increase of 2,097 tons. Brunswick, Ga., exported 20,934 tons in the 9 months ending September 30th, as against only 1,719 tons last year.

Abroad sales of high-grade Florida rock were recently made at 6¾d. per unit ($10.53 per ton), delivered at United Kingdom ports.

Tennessee rock is easier, and sales are reported at a 15@25c. cut in the f. o. b. prices. Exports of Tennessee phosphates through Pensacola and Charleston during the 8 months ending August 31st were as below, in long tons:

Destination.	August.	Eight months.
Italy	4,188	43,861
France	8,215	37,443
Belgium	.....	8,749
England	1,325	6,565
Germany	.....	1,919
Total, tons	13,728	98,537

Of the total for the eight months Italy received 44.5%, and France 38%.

Exports of South Carolina phosphates from Beaufort in September were a little less than the previous month, amounting to 11,531 tons.

Coastwise shipments of South Carolina phosphates from Charleston in the 8 months ending August 31st were 30,307 tons, as against 49,149 tons in the same period last year; showing a decrease of 18,842 tons, or 38.3%.

Algerian phosphates are in moderate request on the Continent, and owing to competition prices are unsteady.

We quote prices as below:

Phosphates.	Per ton F. o. b.	C. i. f. Un'd Kingdom or European Ports. Unit.	Long ton.
*Fla. hard rock (77@80%)	$6.50@7 00	6¾@7¼d	$10.53@10.92
*Fla. land pebble (68@73%)	3.55@4.00	6 @6¼d	8.40@ 8.57
*Fla. Peace River (58@63%)	2.50@2.75	5 @5¼d	6.00@ 6.60
†Tenn....78@80%, export.	3.25	6¾@7d	10.53@10.92
†Tenn .....78% domestic.	2.75@3 00	.....	.....
†Tenn . .. 75% "	2.70@2.75	.....	.....
†Tenn.. 70@72% "	2.10@2.25	.....	.....
§So. Car. land rock.....	3.50	5@5¼d	6.00@6.60
§So. Car. river rock	2.75@3.25	.....	.....
Algerian, rock...(63@70%)	.....	6@6¼d	8.04@8.70
Algerian, rock...(58@63%)	.....	5@5¼d	6.00@6.60
Tunis, Gafsa.....(58@63%)	.....	5@5¼d	6.00@6.30

* Fernandina, † Mt Pleasant. § On vessels Ashley River.

Freight rates from Florida ports are about as follows: To Baltic ports, $5; Continen-

tal, $3.24@$3.60; Mediterranean, $4.20@$4.56; United Kingdom, $3.84.

From Savannah, Ga., to Continental ports, $3.18.

Liverpool. Oct. 3.

(Special Report of Joseph P. Brunner & Co.)

Our market for heavy chemicals is steady and a fair all-round trade is reported.

Soda ash is moving off at the usual varying prices as to destination. We quote spot range for tierces as follows: Leblanc ash, 48%, £5 15s. @£6; 58%, £6 2s.@£6 7s. 6d. per ton net cash. Ammonia ash, 48%, £4 10s.@£4 15s.; 58%, £4 15s. @£5 per ton net cash. Bags, 5s. per ton under price for tierces. Soda crystals are in request and for most markets £3 7s. 6d. per ton, less 5%, is quoted for barrels, or 7s. less for bags, with special terms for certain export quarters. Caustic soda is in steady demand at late rates, as follows: 60%, £9@£9 5s.; 70%, £10@£10 5s.; 74%, £10 10s.; 76%, £10 15s.@£11 per ton net cash.

Bleaching powder has been attracting more attention of late and sales of unbarred make are reported for America at £6 17s. 6d. per ton f. o. b. here, prompt delivery, also at a trifle less for 1902 delivery. It is firmer now at £7@£7 5s. per ton, net cash, for hardware packages; with special terms for continental markets.

Chlorate of potash is easier at 3@3⅛d. per lb. net cash, and some fair lines have been placed at the decline.

Bicarb. soda is without change and quoted at £6 15s. per ton, less 2½% for the finest quality in 1 cwt. kegs, with usual allowances for larger packages; also special terms for a few favored markets.

Sulphate of ammonia continues quiet, but holders are firm in their ideas, and for good gray 24@25% in double bags f. o. b. here, £11@£11 2s. 6d. per ton, less 2½%, may be called nearest range of values.

Nitrate of soda is in fair demand on spot at £9 10s.@£9 12s. 6d., less 2½% for double bags f. o. b. here, as to quality and quantity.

Exports for the month ending September 30th last, as taken from the Board of Trade returns just issued, were: Bleaching powder, total shipments to all quarters, including United States, 95,736 cwts.; shipments to United States alone, 71,320 cwts.; soda ash, 126,353 cwts.; caustic soda, 101,741 cwts.; Bicarb. soda, 23,224 cwts.; soda crystals, 27,270 cwts.; sulphate soda (saltcake), 46,718 cwts.; other sorts, 25,496 cwts.; shipments of sodas to all quarters, including United States, total, 350,802 cwts.

These shipments show a considerable increase as compared with the corresponding month of last year, and as regards soda compounds are the heaviest of any month this year. In bleach the increase is principally in the shipments to America.

Messina, Sicily. Sept. 30.

(Special Report of Emil Fog & Son.)

Brimstone.—The pacific prospects in consequence of the Czar's visit to France had a disastrous effect on our foreign exchange. Premium on gold declined considerably and is now at 3%, against 6% a few months ago. This raises all quotations in sterling value correspondingly.

The Anglo-Sicilian maintains its prices unflinchingly. Some dissident mine owners have lately adhered to the company. It is reckoned that 80% of the whole production belongs now to the Anglo-Sicilian Company, which will consequently control the market still more easily.

Arrivals of free brimstone, belonging to dissidents, have not been wanting, causing even some momentary depression, but the quantity is quite insufficient. The French refiners by contract were bound to buy yearly 60,000 tons from the Anglo-Sulphur; this contract was cancelled, the Frenchmen paying an indemnity, and the latter will henceforward also be competing for dissidents' sulphur.

We quote per ton, f. o. b.: Best unmixed seconds, 83s. ($19.92); best thirds, 72s. ($17.28); refined block, 100%, 84s. 6d. ($20.28); refined roll, 91s. 6d. ($21.96); sublimed flowers, in bags, 95s. 6d. ($22.92).

Freights.—The outbreak of bubonic plague at Naples is threatening to play havoc in freights, should quarantines be imposed. So far rates to New York remain unaltered at 6s. 9d. ($1.62); to other ports higher; Boston and Portland, 8s. 6d. ($2.04); Baltimore and Philadelphia, 8s. 3d. ($1.98); Swedish ports, 11s. ($2.64).

IRON MARKET REVIEW.

NEW YORK, Oct. 18, 1901.

Pig Iron Production and Furnaces in Blast.

Fuel used	Week ending Oct. 19, 1900. F'ces.	Tons.	Oct. 18, 1901. F'ces.	Tons.	From Jan., '00. Tons.	From Jan., '01 Tons.
An' racite & Coke.	182	215,550	221	300,675	11,223,630	12,155 789
Charcoal.	31	8.325	25	7,475	302,563	321,380
Totals..	213	223,875	246	308,150	11,526,193	12,477,16

Reports from all our correspondents show a continued large volume of business, and in some lines it is impossible to secure deliveries as promptly as they are wanted. Pig iron capacity is well taken up for the balance of the year and into the first quarter of 1902. Steel billets are scarce for near-by deliveries, and the same may be said of structural steel, bars and sheets. In plates there is somewhat less activity. In fact, an active winter business is now assured, and probably an even range of prices. No concessions of importance can be expected in the present state of trade.

Export business is very quiet, however, as might be expected from the condition of trade abroad. Both English and German manufacturers have to face an unsatisfactory home demand, and are competing very actively for foreign orders. They are making lower prices wherever they seem to be needed to secure business, and leaving very little, if any, profit, their object, apparently, being to secure orders at any price.

Birmingham. Oct. 14.

(From Our Special Correspondent.)

The pig iron market in Alabama is quite strong and continues to point upward. The advance in quotations is being accepted by purchasers and the production is none too great. During the next 30 days there will be two furnaces to resume operation. The stocks on hand have been reduced a little lately, and it is believed that the demand will shortly be equal to the increased production. The Tennessee Coal, Iron and Railroad Company has put in blast its fifth furnace at Ensley, making 5 going at that point, the first time in the history of the suburb. The Sloss-Sheffield Steel and Iron Company will during this week or the first of next blow in the city furnace now undergoing repairs, while the North Birmingham furnace will likely be started up about the middle of next month. There are many inquiries received and sales are being made for delivery next year.

During the past fortnight the committees of the miners in the employ of the Tennessee Company and Sloss-Sheffield Company examined the sales books of those companies, ascertaining that the average price of pig iron during the month of September was under $10.75. This puts the mining wage at 50c. per ton, which is the smallest amount paid the coal miners in Alabama in nearly 2 years. However, it is expected that an advance of from 2½c. to 5c. per ton will be made when the books are again examined before November 5th.

The local demand for pig iron is quite brisk. There is an excellent demand for finished iron and steel also.

The following quotations for pig iron are given: No. 1 foundry, $11.50@$12; No. 2 foundry, $11; No. 3 foundry, $10.50; No. 4 foundry, $9.75; gray forge, $9.50; No. 1 soft, $11.50@$12; No. 2 soft, $11.

The presence in the city during last week of President A. W. Thompson, General Manager Taylor and other officers and directors of the Republic Iron and Steel Company has had wonderful effect. Mr. Thompson stated to the correspondent of the "Engineering and Mining Journal" that a steel plant in this district would be recommended to the board of directors of the Republic Company. Mr. Julian Kennedy, a steel expert from Pennsylvania, came to the district while the officers of the Republic Company were here and took a look at conditions in order to make an estimate as to the cost of such a plant. It is proposed to erect an open-hearth steel plant. It is asserted also that the Republic Company will expend something like $3,000,000 on the plant.

Cleveland. Oct. 16.

(From Our Special Correspondent.)

Iron Ore.—The shippers of iron ore on the lakes are confronted with a situation which makes it almost imperative that, except in extraordinary circumstances, the use of wild boats be dispensed with. The car supply of the lower lake docks is so short that it is impossible to do more than keep the contract vessels going. Even under these circumstances the boats engaging in the ore trade are getting very poor dispatch and vessel men are not offering their tonnage with any alacrity. The situation is so serious at this time and the conditions in the future now apepar to be so much worse that, it has come to be generally believed in marine circles, the shipment of the year is to be seriously curtailed. Some hopes were entertained earlier in the year that at least 20,000,000 tons would be carried during the season. It promises now to be a struggle to maintain the record of last year, 19,000,000. During this week the bidding for Escanaba tonnage has caused an increase in the rates by 5c. The quotations therefore are: 90c. from Duluth, 80c. from Marquette and 65c. from Escanaba. The market price of ore does not change, being $4.25 on bessemer and $3 on non-bessemer and Mesabi.

Pig Iron.—Values in foundry grades have increased slightly during the week and now $14 is about a minimum on No. 2 in the Valley, and $14.50 on No. 1. Southern foundry is still quoted at $11, Birmingham, with another advance in sight. Sales of foundry grades have been somewhat easier during the week, although the supply has about been sold up for the year, with some contracts for next year taken by malleable producing concerns. Bessemer and basic are well sold up for November and a better part of December, but with no orders showing up yet for the next year. Bessemer is quoted at $15.25, Valley furnace, and basic at $14.25.

Finished Material.—Bars are still selling very heavily and most of the mills report their sales so much heavier than production that the ability to make deliveries is being more and more interefered with. Contracts covered this week have aggregated a very satisfactory tonnage. The prices do not change much, being still 1.55c. for iron bars, Pittsburg, 1.50c. for bessemer steel bars and 1.60c. for open-hearth steel bars at Pittsburg. The sales have been almost unprecedented during the last few weeks. Another strong feature of the market is the structural material trade, as some of the mills are reporting that it is very difficult to make deliveries now much before the middle of January. All shapes are hard to get, especially the smaller ones. The prices on larger beams and channels and angles remain at 1.70c., while the smaller sizes are bringing a premium ranging about $2 a ton. Billets are selling well also and the supply is short. The smaller sizes have been taken up by the mills which recently resumed operations. The nominal quotation on small billets is $30, the association price, and on larger sizes the price varies, $27 being about the mean. Sales of steel rails keep up, as the railroads in this vicinity are covering their needs for next year. The buying of the roads shows an increase in the amounts required as compared with last year. The price remains at $28. Plates are selling fairly well, with some ship orders closed this week, as the American Ship Building Company is taking on orders for new boats. The price holds at 1.70c.

Old Iron.—The buying of scrap has been lively this week, with prices stable and strong, as follows: Heavy steel, $17; steel rails, $17; old iron rails, $22; old car wheels, $17; old steel axles, $19; stove plate, $10; cast scrap, $13; No. 1 wrought, $16.50; cast borings, $8.

Philadelphia. Oct. 17.

(From Our Special Correspondent.)

Pig Iron.—The statements of agents of furnaces and brokers do not shed much additional light on the local pig iron situation. The trade is interested in movements farther West as likely to afford a key to the probable future of the market. Our leading makers reitterate what they have said regarding the absorption of production. The oversold condition keeps prices firm. The certainty of steady prices in bar iron will help to steady forge and to increase the orders for it. In fact, since the recent bar iron understanding went into effect the forge iron makers have been doing a better business. Foundry pig is strong and buyers are obliged to be aggressive in order to secure themselves. Bassic pig is also showing strength and the consumption has grown within the past month. It is hardly worth while to quote prices.

Billets.—The consumption of crude steel has perceptibly increased and consumers are now figuring on late needs, although the persistency with which certain large buyers are insisting on concessions would indicate that they think the market will soon take a turn downward.

Bar Iron.—The agreement with the Republic Iron Company has worked good results already. The market is strong and all consumers are carrying more stocks than usual.

Merchant Steel.—The steel users are just now indifferent. They are assured by manufacturers that prices will probably remain stationary. The combination is holding a very firm grip on the situation. Throughout the East all users are working up more raw material, but are not just now in the market.

Nails.—There is a heavy demand for both wire and cut nails at full quoted prices.

Skelp.—The skelp iron makers have been obliged to enter into arrangements for early winter delivery, which will tax their facilities to even greater strain. Prices are strong.

Pipe.—All pipe and tube work is crowding. Manufacturers say the pressure among the smaller users will probably be greater as winter approaches.

Sheets.—There is not as much desire to buy at present, but the mills are very much oversold, and the conditions of the consuming industries in this territory are such as to make mill proprietors feel quite comfortable. The particular selling this week was in heavy sheets and galvanized.

Plates.—The possibility of shaded quotations on large orders has been spoken of on the outside, but those who know decline to confirm the rumor. Large consumers are ready to contract, but are not obliged to, and it is understood they are standing still until they can see better what to do.

Structural Material.—It is denied that large contracts are now under way. Smaller buyers are in the market who want early deliveries and are being accommodated.

Rails.—The doings in the rail market are carefully guarded, and only very general statements are to be had. Prices are $28, and it is asserted

there is no foundation for the rumor that $30 is to be named November 1st.

Old Rails.—There are inquiries in this market, but evidently prices are prohibitive.

Pittsburg. Oct. 16.

(From Our Special Correspondent.)

There was but little new business placed during the week outside of the heavy buying of bessemer pig iron by the big Steel Corporation, but prices on all lines of iron and steel products continue firm. The only features of the market this week were the placing of orders for bessemer steel billets for delivery next year at $27, and a scarcity of bessemer pig iron, due to the purchase by the United States Steel Corporation of 50,000 tons of bessemer iron for delivery in November. It can be stated on reliable authority that billets will continue to be scarce during the balance of the year. The leading steel interests is consuming all the billets that can be turned out at its different plants. The large independent company of this district is also out of the market on billets, using all it can produce. Work on the new open-hearth steel plant is progressing favorably, but it will not be completed and in operation before next April or May. All the mills have enough business to keep them in steady operation for the balance of the year and into the first quarter of next year. The only weakness, if it can be so called, is in plates. Most of the manufacturers are able to accept new business and make deliveries within 30 days. A premium is freely paid for prompt shipment of structural material and orders have been taken at prevailing rates for delivery in the first quarter of next year, insuring a strong market for at least 4 or 5 months. Prices are unchanged, beams and channels still being quoted at 1.60c., but several small sales for spot shipment were made this week at 2.50c.

There is but little bessemer and basic pig iron available in the Mahoning and Shenango Valleys. The demand for sheets continues heavy and it is impossible to get satisfactory deliveries on any new business. While all the mills are in full operation it seems difficult to catch up on old orders, and enough new business has been taken to insure the continuous operation of the sheet mills for at least 4 months. The West Carnegie Sheet Steel Company has just been formed by Pittsburg capitalists and a site has been secured near the town of Carnegie, about 10 miles from this city on the Pittsburg, Chicago, Cincinnati & St. Louis Railroad. The size of the plant has not yet been determined. Several of the new sheet steel plants in course of erection in different parts of the west will be ready for a start about November 1st. A site has not yet been definitely decided upon for the big steel plant to be built by the Republic Iron and Steel Company. Some of the officers and several practical steel men from this city visited points in Alabama last week to ascertain if Southern metal could be used in the manufacture of steel, but it was not deemed practicable and the plant will be erected elsewhere. A site at Newport News was also inspected and the officers visited Pittsburg yesterday. It is reported that an option has been secured on a tract of land at McKee's Rocks, a suburb of Pittsburg. A report from Youngstown to-day is to the effect that the plant will likely be built in that locality. It is said that the amount to be expended on the new steel works will reach $2,000,000. The only official information, however, is that plans have been prepared and that a large steel plant will be built as soon as a suitable site can be secured.

Pig Iron.—There is a scarcity of both bessemer and basic pig iron. The United States Steel Corporation is reported to have bought 50,000 tons of bessemer pig for delivery next month at $15.25, Valley furnaces. The demand for gray forge continues and about 5,000 tons were sold at $14, Pittsburg. About the same amount of foundry No. 2 was sold at $14.50, Pittsburg.

Steel.—Bessemer and open-hearth steel billets cannot be secured for delivery this or next month. Several sales of bessemer billets are reported for delivery next year at $27. There has been no change in the prices of bars or plates, the former being quoted at 1.50c. and the latter at 1.60c.

Sheets.—It seems impossible for the sheet mills to catch up on orders and new business is being received daily. Despite the fact that all the mills have been in steady operation since the close of the strike over a month ago orders continue to accumulate. No. 28 gauge is quoted at 3.25@3.35c. and for spot shipment 4c. can readily be obtained. Galvanized sheets are quoted at 70 and 10% off and for spot delivery 65 and 5% off.

Ferro-manganese.—But little domestic 80% is being sold and the price quoted is $55@$60. Sales of the foreign product are at $55.

New York. Oct. 18.

Pig Iron.—The market is strong with demand good. We quote for tidewater delivery: No. 1 X foundry, $15.50@$15.65; No. 2 X, $14.65@$15.15; No. 2 plain, $14.15@$14.65; gray forge, $14@$14.50. For Southern iron on dock, New York, No. 1 foundry, $15.50@$15.75; No. 2, $14.75@$15; No. 3, $14.25@$14.50; No. 4, $13.75@$14; No. 1 soft, $15.50@$15.75; No. 2, $14.50@$14.75.

Bar Iron and Steel.—There is no abatement in demand as yet. Prices are firm. We quote 1.53c. for common bars in large lots on dock; refined bars, 1.63c.; soft steel bars, 1.65c.

Plates.—Demand is as heavy as it has been. Prices show no change from the basis that has stood for several months. We quote for tidewater delivery in car-loads: Tank, ¼-in. and heavier, 1.78c.; flange, 1.88c.; marine, 1.98c.; universals, 1.78c.

Steel Rails and Rail Fastenings.—Everything indicates that present prices will prevail for next year's business. Standard sections are quoted at $28 at Eastern mills; light rails at $28@$30, according to weight. Spikes are 1.80c.; splice bars, 1.55c.; bolts, 2.60@2.70c.

Structural Material.—There is very little change in conditions; demand continues good and prompt delivery is hard to get. We quote for large lots at tidewater as follows: Beams, 1.75c.; channels, 1.75c.; tees, 1.80c.; angles, 1.75c.

METAL MARKET.

New York. Oct. 18.

Gold and Silver.

Gold and Silver Exports and Imports.
At all United States ports in September and year.

Metal.	September.		Year.	
	1900.	1901.	1900.	1901.
GOLD.				
Exports	$806,572	$162,912	$52,604,921	$32,680,119
Imports	7,861,553	11,642,070	39,989,110	35,136,681
Excess	I. $7,054,981	I. $11,479,158	E. $12,615,811	I. $2,456,562
SILVER.				
Exports	5,723,708	4,835,153	47,501,891	41,488,379
Imports	4,171,935	2,469,820	30,270,430	22,765,737
Excess	E. $1,551,773	E. $2,365,313	E. $17,231,461	E. $18,722,642

These figures include the exports and imports at all United States ports, and are furnished by the Bureau of Statistics of the Treasury Department.

Gold and Silver Exports and Imports, New York.

For the week ending Oct. 17th, 1901, and for years from January 1st, 1901, 1900, 1899 and 1898.

Period.	Gold.		Silver.		Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
Week	$200,500	$47,218	$562,445	$125,062	E. $590,635
1901..	26,108,529	4,014,603	25,122,255	3,051,839	E. 44,164,342
1900..	36,622,203	1,882,708	31,637,653	3,596,674	E. 62,480,474
1899..	11,610,623	13,008,941	23,113,702	2,964,367	E. 18,751,917
1898..	6,981,105	93,486,695	27,512,490	2,444,819	I. 71,138,219

Exports of gold were chiefly to the West Indies; of silver to London. Imports of gold were in small lots, from various ports; those of silver were chiefly from Mexico.

The United States Assay Office in New York reports the total receipts of silver at 89,000 oz., against 69,000 oz. last week.

Prices of Foreign Coins.

	Bid.	Asked.
Mexican dollars	$.45¾	$.48
Peruvian soles and Chilean pesos	.42	.45
Victoria sovereigns	4.85	4.88
Twenty francs	3.84	3.88
Twenty marks	4.73	4.85
Spanish 25 pesetas	4.78	4.82

Financial Notes of the Week.

The speculative markets are still uncertain, but general business continues steady. The expected gold imports have been postponed, chiefly by the financial stringency in Paris and Berlin. The press in Paris seems to be temporary only, but is sufficiently serious for the time.

The market for silver has been firm. Large orders have been in the market, but notwithstanding this the price has not advanced. The situation, however, seems steady.

The statement of the United States Treasury on Wednesday, October 16th, shows balances in excess of outstanding certificates as below, compared with the corresponding day last week:

	Oct. 9.	Oct. 16.	Changes.
Gold	$101,188,360	$100,995,136	D. $193,224
Silver	19,004,543	18,084,916	D. 919,627
Legal tenders	8,640,623	7,634,875	D. 1,005,748
Treas. notes, etc.	62,387	57,364	D. 5,023
Totals	$128,895,913	$126,772,291	D. $2,123,622

Treasury deposits with national banks amounted to $110,752,102, showing a decrease of $4,610,377 over last week.

The statement of the New York banks, including the 63 banks represented in the Clearing House—for the week ending October 12th—gives the following totals, comparison being made with the corresponding week in 1900 and 1901:

	1899.	1900.	1901.
Loans and discounts	$705,899,900	$807,855,000	$870,900,700
Deposits	774,946,200	861,588,700	942,688,900
Circulation	15,586,900	30,283,600	30,983,800
Specie	145,337,700	160,259,200	182,501,900
Legal tenders	49,576,200	59,601,900	70,653,500
Total reserve	$194,913,900	$219,861,100	$253,155,400
Legal requirements	193,736,550	215,397,175	235,672,225
Balance, surplus	$1,177,350	$4,463,925	$17,483,175

Changes for the week, this year, were increases of $365,700 in circulation, $2,147,300 in specie, and $1,923,150 in surplus reserve; decreases of $2,657,500 in loans and discounts, $864,200 in deposits and $440,200 in legal tenders.

The following table shows the specie holdings of the leading banks of the world at the latest dates covered by their reports. The amounts are reduced to dollars and comparison is made with the holdings at the corresponding date last year:

	1900.		1901.	
Banks:	Gold.	Silver.	Gold.	Silver.
N. Y. Ass'd.	$160,259,200	.....	$182,501,900	.....
England	167,999,225	.....	186,866,525	.....
France	457,313,060	$223,622,015	471,469,130	$220,195,460
Germany	124,465,000	64,115,000	137,160,000	70,660,000
Spain	68,445,000	83,535,000	70,025,000	85,680,000
Nethl'ds	24,350,000	27,700,000	28,775,500	28,246,500
Belgium	14,410,000	7,206,000	15,806,665	7,903,335
Italy	77,125,000	8,355,000	79,500,000	9,819,000
Russia	365,990,000	33,050,000	336,775,000	30,425,000

The returns of the Associated Banks of New York are of date of October 12th, and the others October 10th, as reported by the "Commercial and Financial Chronicle" cable. The New York banks do not report silver separately, but the specie carried is chiefly gold. The Bank of England reports gold only.

Exports of merchandise from the United States in September were valued by the Bureau of Statistics of the Treasury Department at $106,895,274. While the total is very large taken by itself, it is the smallest reported for any month this year except June. For the nine months ending September 30th the statement is as follows:

	1900.	1901.
Exports	$1,031,964,238	$1,046,228,274
Imports	624,467,433	646,957,728
Excess, exports	$407,496,805	$399,270,546
Add excess of exports, silver		18,722,642
Total		$417,993,188
Deduct excess of imports, gold		2,456,562
Apparent balance, exports		$415,536,626

The gold and silver movement in detail will be found in the usual place, at the head of this column.

Receipts of gold and silver from Mexico at San Francisco, chiefly by rail, are reported as below for the nine months ending September 30th:

	1900.	1901.	Changes.
Silver dollars	$7,320,128	$2,881,233	D. $4,438,895
Silver bullion	1,341,839	1,198,960	D. 142,879
Total silver	$8,661,967	$4,080,193	D. $4,581,774
Gold bullion	211,289	130,946	D. 80,343
Total	$8,873,256	$4,211,139	D. $4,662,117

The falling off in Mexican dollars has been due partly to an actual scarcity of these coins, as has been heretofore explained; and partly to the smaller demand for China.

Specie shipments from San Francisco by water in September included $1,609,704 silver and $168,471 gold, a total of $1,778,175. For the nine months ending September 30th the shipments were as follows:

	Gold.	Silver.	Totals.
U. S. coin	$1,327,272	$175,011	$1,502,283
Mexican dollars	.....	2,176,105	2,176,105
South American coin	.....	14,785	14,785
Bars, etc.	221,835	3,051,320	3,273,155
Totals	$1,549,107	$5,417,221	$6,966,328
Totals, 1900	3,824,490	11,874,253	15,698,743

The destinations of these shipments were as follows: China, $6,219,837; Japan, $2,280; India, $30,000; Central America, $720; Mexico, $100,000; Pacific Islands, $5,020; New York, $1,608,471. The decrease shown this year in silver was in shipments to China; that in gold was in gold coin shipped to New York.

Shipments of silver from London to the East for the year up to October 3d, 1901, are reported by Messrs. Pixley & Abell's circular as follows:

	1900.	1901.	Changes.
India	£4,523,872	£5,962,910	I. £1,439,038
China	815,256	590,212	D. 225,044
The Straits	468,444	225,126	D. 243,318
Totals	£5,807,572	£6,778,248	I. £970,676

Arrivals for the week, this year, were £224,000 in bar silver from New York. Shipments were £50,000 in bar silver to Bombay, £45,000 to Calcutta, and £12,000 to China; total, £107,000; also £45,000 Mexican dollars to China and the Straits.

Indian exchange continues strong, though

Council bills sold in London at an average of 15.97d. per rupee, the same as the previous week. No silver is going to India just now, and the anticipated shipments of gold from Australia have not taken place. The total sale of Council bills in London for the six months of the Indian fiscal year from April 1st to September 30th was 93,788,653 rupees, realizing £6,226,298, an average of 15.93d. per rupee.

Average Prices of Silver per oz. Troy.

Month	1901.		1900.		1899.	
	Lond'n Pence.	N. Y. Cents.	Lond'n Pence.	N. Y. Cents.	Lond'n Pence.	N. Y. Cents
January...	28.97	62 82	27.30	59.30	27.42	59.36
February..	28.13	61.06	27.49	59 76	27.44	59.42
March....	27.94	60 63	27.59	59.81	27.48	59.64
April	27 30	59 29	27.41	59.59	27.65	60.10
May.....	27.43	59.61	27.56	59.96	28.15	61.23
June.....	27 42	59.57	27.81	60.42	27.77	60 43
July.....	26.96	58.46	28.23	61.25	27.71	60 26
August....	26.94	58.37	28.13	61.14	27.62	60.00
September	26.95	58.26	28.85	62.63	27.15	58.89
October ..	.....	... .	29.58	63.83	26.70	57.98
November	.....	.....	29.66	64.04	27 02	58.67
December.	.....	.....	29.68	64.14	27.21	58.99
Year.	.....	.....	28.27	61.33	27.44	59.58

The New York prices are per fine ounce; the London quotation is per standard ounce, 925 fine.

Average Prices of Metals per lb., New York.

Month.	Copper.		Tin.		Lead.		Spelter.	
	1901.	1900.	1901	1900.	1901.	1900.	1901	1900.
Jan	16.25	15 58	26.51	27.07	4.35	4.68	4.13	4.65
Feb.....	16.38	15.78	26 68	30.58	4.35	4.675	4.01	4.64
March...	16.42	16.29	26 03	32.90	4.35	4.675	3.92	4.60
April....	16.43	16.76	25.93	30.90	4.35	4.675	3.98	4.71
May.....	16.41	16.34	27.12	29.37	4.35	4.121	4.04	4.53
June....	16 38	15.75	28.60	30 50	4.35	3.901	3.99	4.29
July ..	16.31	15.97	27 85	33.10	4.35	4.030	3.95	4.28
August .	16.25	16.35	26.78	31.28	4.35	4.250	3.99	4.17
Sept.....	16.25	16.44	25.31	29.42	4.35	4.350	4.08	4.11
October..	.....	16.37	... .	28.54	.....	4.350	.....	4.15
Nov.. ...	.....	16.40	...	28.25	.....	4.350	.....	4.29
Dec	.....	16.31	.....	28.94	.....	4.350	.....	4.25
Year.	.....	16.19	.....	29.90	.....	4.37	.....	4.39

The prices given in the table for copper are the averages for electrolytic copper. The average price for Lake copper for the year 1900 was 16.52c.; for the month of January, 1901, it was 16.77c.; for February, 16 90c; for March, 16.94c; for April, 16.94c; for May, 16.94c.; for June, 16.90c; for July, 16.61c; for August 16.50c.; for September, 16.54c.

UNITED STATES.

Articles. Long tons.	August.		Eight months.		
				Exports.	
	Imports.	Exports.	Imports.	Foreign.	Domestic.
Ores & Metals.					
Antimony	192	.....	1.174	.....	.....
" ore	13	.....	7 4	22	.....
§Copper	4,266	6,111	21,681	4,321	59,896
" ore, matte	12,065	2,042	57,008	6,693	9,793
Iron and Steel:					
Bars, rods	4,149	3,006	24,078	39	39,269
Billets, blooms.	745	275	5,234	2	27,053
Hoops, bands...	348	16	805	.....	1,009
Pig iron	4,301	2,235	28,281	126	46 795
Nails & spikes..	.....	2,177	.....	.....	22,187
Rails	18	18.473	871	.....	249 877
Scrap.	4,363	2.344	12,920	3,331	9,519
Sheets, plates..	794	1,560	2 988	81	26,258
Wire.....	160	5,573	2,261	27	53,695
Miscellaneous..	39	1	281	13	16
Iron Ore	122,837	13,605	609,065	....	37,966
Lead	8	35	119	22	2,108
" ore, bullion .	8,172	6,01)	71,718	62,357	....
Manganese ore, oxide.....	11,186	2	10,371	102	....
Nickel ore, matte	4,662	199	27,951	.....	1,721
Quicksilver	.....	19	....	.....	230
Tin.....	2,888	22	22 709	778	....
Tin & black plates	8,448	3	42,128	107	407
Zinc.....	64	170	329	.....	2,248
" ore	.....	3,783	.....	.....	27,098
Minerals.					
Asphalt.....	13,953	48	97,587	105	.....
Brimstone	17,978	... .	109,161	151	....
Cement ...	10,233	7,780	88,112	4,460	50,041
Coal, anthracite .	.....	213,801	....	7	1454,223
" bituminous.	141,862	543.423	1304,025	2,083	3689,273
Coke	.....	20,136	.....	.....	263 051
Copper sulphate.	....	111	.....	.....	20,881
Graphite	1	.... ..	5	3	.....
Nitrate of soda. .	18,869	184	139,426	1,656	.....
Phosphate rock..	24 643	108,365	96,157	30	507 613
Pyrites	31,797	.....	259 512	.....	.....
Salt	24,781	352	120,510	876	6,582

§ The figures for copper are those given by the Treasury Department. The statement made by Mr. John Stanton for the Associated Copper Companies will be found monthly in our metal market. These figures give the exports for August as 6,840 tons; eight months, 61,692 tons.

Import Duties.

Metals.—The duties on metals under the present tariff law are as follows: Antimony, metal or regulus, ¾c. a lb. Lead, 1½c. a lb. on lead in ores; 2½c. a lb. on pigs, bars, etc.; 2½c. on sheet, pipe and manufactured forms. Nickel, 6c. a lb. Quicksilver, 7c. a lb. Spelter or zinc, 1½c a lb. on pigs and bars, 2c. on sheets, etc. Copper, tin and platinum are free of duty.

Minerals.—Duties are: Asphalt, crude, $1.50 per ton, and refined $3 per ton. Coal, bituminous, 67c. long ton; coke, 20% ad. val. Cement, Roman, Portland and hydraulic, in bulk, 8c. per 100 lbs. and in packages 7c. Copper sulphate, ½c. a lb. Salt, in bulk, 8c. per 100 lbs, and in bags, etc., 12c. Brimstone, anthracite coal, graphite, phosphate rock, pyrites and nitrate of soda are free of duty.

Other Metals.

Daily Prices of Metals in New York.

October.	Sterling Exchange.	Silver. Fine oz. Cts.	Silver. London. Pence.	Copper. Lake. cts. ₱ lb.	Copper. Electrolytic ₱ lb.	Copper. London £ ₱ ton.	Tin. cts. ₱ lb.	Lead cts. ₱ lb.	Spelter. N. Y. cts. ₱ lb.	Spelter. St. L. cts. ₱ lb.
12	4.85⅞	57⅝	26⅝	16½ @16¾	16¼	....	25	4.32½ @4.37½	4.25	4.10
11	4.85⅝	57⅝	26⅝	16½ @16¾	16¼	64¾	25¼	4.32½ @4.37½	4.25	4.10
15	4.85⅝	57½	26⅞	16¼ @16¾	16¼	64½	25⅛	4.32½ @4.37½	4.25	4.10
16	4.85¾	57½	26⅞	16½ @16¾	16¼	65	25	4.32½ @4.37½	4.25	4.10
17	4.85¾	57½	26⅞	16¼ @16¾	16¼	63¾	24½	4.32½ @4.37½	4.25	4.10
18	4.85¾	57½	26⅝	16¼ @16¾	16¼	64	24½	4.32½ @4 37½	4.25@ 4 27½	4.10@ 4.12½

London quotations are per long ton (2,240 lbs.) standard copper, which is now the equivalent of the former g. m. b's. The New York quotations for electrolytic copper are for cakes, ingots or wirebars; the price of electrolytic cathodes is usually 0.25c. lower than these figures

Copper.—During the week under review the market has ruled quiet but steady, more confidence being shown generally. Otherwise, the situation is practically unchanged. We quote Lake copper at 16½@16¾c.; electrolytic in cakes, wirebars and ingots at 16¼c., in cathodes at 16c.; casting copper at 15⅞c.

The market for standard copper in London, which closed last week at £65, declined to £64 2s. 6d. on Tuesday, but rallied on Wednesday upon the publication of the fortnightly statistics showing a decrease in the visible supplies of 2,200 tons. Toward the end of the week a somewhat weaker tendency developed, and the closing quotations are cabled as £64@£64 2s. 6d. for spot, £62 15s.@£62 17s. 6d. for three months.

Refined and manufactured sorts we quote: English tough, £71 5s.@£71 10s.; best selected, £72 5s.@£72 10s.; strong sheets, £82 5s.; India sheets, £78 5s.; yellow metal, 6¼@6½d.

Copper production, as reported by Mr. John Stanton, who acts as statistician for the companies, was as follows for September and the nine months ending September 30th, in long tons (2,240 lbs.) of fine copper.

	September. 1900.	September. 1901.	9 months. 1900.	9 months. 1901.
U. S. reporting mines.....	17,986	18,080	169,512	168,726
U. S. outside sources.....	3,400	3,500	30,600	30,900
Total U. S.....	21,386	21,580	200,142	199,626
Foreign, reporting mines	7,145	9,477	66,176	65,302
Totals	28,531	31,059	266,318	264,928
Exports, U. S.....	10,425	6,419	126,151	68,110

The United States production for September shows a small increase—194 tons, or 0.9%. For the nine months there was a decrease of 516 tons, or 0.3%, in production. The output of the foreign reporting mines in September was large; for the nine months it showed a decrease of 874 tons, or 1.3%. The United States exports this year show a large decrease, amounting for the nine months to 58,041 tons, or 46%. They were this year about 34% of the production.

Exports of copper from New York and Baltimore in the current week, as reported by our special correspondents, were 533 tons to France, 305 tons to Holland, 120 tons to Germany, 75 tons to Belgium and 3 tons to Manila; total, 1,111 tons. Also 540 tons matte to England.

Imports were 195 tons from Mexico and 105 tons from England; total, 300 tons.

Tin.—Has been rather irregular, and prices have ruled below the parity at which the metal can be imported. Consumers continue to confine their purchases to their immediate wants, and future deliveries are difficult of sale. While at the beginning of the week spot tin was selling at 25⅛@25¼c., 25c. was accepted on Wednesday, 24½c. on Thursday, the closing quotation to-day being 24½c. for spot; and the nominal prices for November and December being 24¼c. and 24c., respectively.

The foreign market up to Thursday ruled rather firm at about £115, but on the latter day declined to £112 10s. for spot, £105 for three months, closing to-day at £112@£112 2s. 6d. for spot and £7 less for three months.

It will be noticed that the discount at which three months is selling as compared with spot is becoming quite large, indicating rather little confidence in the future of the metal.

Lead.—Is unchanged, and without any special feature. We quote St. Louis at 4.27½@4.32½c., New York 4.32½@4.37½c.

The foreign market is easy, Spanish lead being quoted at £11 7s. 6d.@£11 8s. 9d., English lead 2s. 6d. higher.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is unchanged. Missouri metal brings 4.27½c. and argentiferous lead sells at 4.32½c. Demand is rather light.

Spelter.—Continues strong and advancing, and a good inquiry on the part of consumers is reported. Most of the producers seem to be well sold for several weeks to come. The ruling quotations are 4.10@4.12½c. St. Louis, 4.25@4.27½c. New York.

The foreign market is also firm, good ordinaries being quoted at £17 2s. 6d., specials 5s. higher.

Silesian Spelter Market.—Herr Paul Speier reports from Breslau, under date of October 1st, that the market has shown a stronger tendency. The current quotation for good ordinary spelter is 16.75@17.25 marks per 50 kgs., f. o. b. cars at Breslau. This is equal to an average of 3.67c. per lb. The average price at works for the third quarter was 15 marks per 50 kgs., which compares with 18 marks for the corresponding quarter in 1900, 25.50 marks in 1899 and 19 marks in 1898. Imports and exports in Germany for the eight months ending August 31st were, in metric tons:

	Imports. 1900.	Imports. 1901.	Exports. 1900.	Exports. 1901.
Spelter	31,461	26,508	65,159	62,824
Sheets	204	334	22,039	19,414
Scrap	2,184	1,410	1,703	1,539
Zinc ore.....	91,175	108,280	51,086	50,919
Zinc white.....	6,956	5,371	19,898	20,763
Lithopone	26	35	7,588	8,829

The production of spelter in Silesia for the first half of 1901 was 52,312 metric tons, against 49,408 tons in the first half of 1900.

Antimony is unchanged. We quote Cookson's at 10@10⅛c.; Hallett's, 8½c.; Hungarian, Italian, Japanese and U. S. Star at 8⅜c.

Nickel.—The price continues firm at 50@60c. per lb., according to size and terms of order.

Platinum.—Consumption continues good and prices are strong. Ingot platinum in large lots brings $20@$21 per ounce in New York. In London prices are about on a parity with the New York rate.

Chemical ware (crucibles and dishes), best hammered metal from store in large quantities, is worth 82c. per gram.

Quicksilver.—The nominal quotation in New York continues $51 per flask, but the metal can still be had for somewhat less, $49.50 for large orders. In San Francisco the quotations are $47@$48 per flask for domestic trade, and $43@$44 for export. The London quotation is £9 per flask, with the same price quoted from second hands.

Minor Metals and Alloys.—Wholesale prices, f. o. b. works, are as follows:

Aluminum.	Per lb.		Per lb.
No. 1, 99% ingots	.33@37c.	Ferro-Tungsten (37%)	.28c.
No. 2, 90% ingots	31@34c.	Magnesium	$2.75@$3
Rolled sheets	42c. up	Manganese (over 99%)	$1.00
Alum.-bronze	20@23c.	Mangan'e Cop. (20% Mn)	32c
Nickel-alum	33@39c.	Mangan'e Cop. (30% Mn)	38c.
Bismuth	$1.50	Molybdenum (Best)	$1.82
Chromium (over 99%)	1.00	Phosphorus	50c.
Copper, red oxide	50c.	American	70c.
Ferro-Molyb'um (50%)	$1.25	Sodium, metal	50c.
Ferro-Titanium (10%)	90c.	Tungsten (Best)	62c.
Ferro Titanium (20%)	$1.10		

Variations in prices depend chiefly on the size of the order.

LATE NEWS

A despatch from Los Angeles, Cal., October 17th, to the New York "Evening Post," says: "An important step is being taken in the control of the oil industry of California, about 30 of the leading producers of oil in the Kern County fields having been brought into the Associated Oil Company, which will control about 70% of the producing wells, an equal percentage of the demonstrated territory in the Kern River field, and a considerable portion of the demonstated land in the other oil-fields of Kern County. The new company is capitalized at $40,000,000.

"The companies which have entered the new corporation are the Canfield, Black Jack, Wolverine, Alma, Henrietta, Olema, Alma, Jr., Alpha, Senator, Chicago Crude, Central Point, Toltec, Redbank, Green and Whittier, Colossal, Reed Crude, Linda Vista, Sterling, Sovereign, California Standard, Giant, San Joaquin, Monte Cristo, Shamrock, Claremont, Piedmont, and all the companies organized by C. A. Canfield.

"It has been announced that the Standard Oil Company will build a refinery on San Francisco Bay, and will lay a pipe line from the Kern River oil-field to tide-water, but there is no evidence that the Associated Company has entered into any arrangement with the Standard for handling its product, and it has been said that the new company may lay its own pipe line unless lower freight rates can be obtained from the railroads. It is believed that the price of oil will be raised to 50c. in the Kern River field, while the actual cost of production is estimated at about 25c. This will warrant the raise of the price of oil produced in Los Angeles, Ventura, Santa Barbara, and Orange Counties to $1 in the fields, and will give San Francisco fuel oil at about $1 a barrel."

STOCK QUOTATIONS.

NEW YORK.

Name of Company.	Location.	Par val.	Oct. 11. H.	Oct. 11. L.	Oct. 12. H.	Oct. 12. L.	Oct. 14. H.	Oct. 14. L.	Oct. 15. H.	Oct. 15. L.	Oct. 16. H.	Oct. 16. L.	Oct. 17. H.	Oct. 17. L.	Sales
Alamo	Colo.	$ 1	....	....	....	....	.14½	....	....	....	....	....	....	....	1,000
Alice	Mont.	25	.55	....	....	....	....	....	....	....	....	....	....	....	1,000
Amalgamated c..	Mont.	100	90 25	88.50	90.00	88.75	89.25	87.25	90.25	87.25	88.00	85.75	87.63	....	307140
Anaconda, c.....	Mont.	25	37.00	36.50	36.75	36.50	36.50	35.63	36.75	36.00	36.13	34.75	35.38	....	18,300
Anaconda Gold..	Colo.	5	....	....	....	....	....	....	....	....	....	....	....	....	....
Best & Belcher..	Nev ..	8	....	....	....	....	....	....	.15	....	....	....	....	....	300
Breece	Colo.	25	....	....	....	....	....	....	....	....	....	....	....	....	....
Brunswick	Cal....	1	.07	....	....	....	.08	.06	.10	....	.12	....	....	....	19,000
Catalpa	Colo.	10	....	....	....	....	.14	....	....	....	.14	....	....	....	300
Comstock T.....	Nev ..	100	.06	....	....	....	.06	....	....	....	....	....	....	....	2,400
" Bonds	Nev ..	100	....	....	....	....	....	....	.06	....	....	....	....	....	2,000
Con. Cal. & Va..	Colo.	2½	....	....	....	....	1.80	....	1.75	....	....	....	....	....	700
Cripple Cr. Con .	Colo.	1	....	....	....	....	.03½	....	....	....	.03½	....	....	....	1,500
Elkton	Colo.	1	....	....	....	....	....	....	.30	....	....	....	....	....	300
Gold Dollar	Colo.	1	.20	....	....	....	....	....	....	....	....	....	....	....	500
Gold Fleece	Colo.	1	....	....	....	....	....	....	.34	....	.38	....	....	....	1,000
Hale & Norcross	Nev ..	8	.14	....	....	....	....	....	....	....	....	....	....	....	200
Horn Silver	Uath.	25	....	....	2.02	....	....	....	....	....	1.93	....	....	....	310
Iron Silver	Colo .	20	....	....	.65	....	....	....	....	....	....	....	....	....	200
Isabella	Colo..	1	.42	....	.45	....	.44	....	.47	....	.48	....	....	....	1,700
La Crosse	Colo..	10	....	....	....	....	....	....	....	....	.06	....	....	....	100
Little Chief	Colo..	1	....	....	....	....	....	....	....	....	.12	....	....	....	100
Mexican	Nev ..	8	.16	....	....	....	....	....	....	....	....	....	....	....	300
Mollie Gibson ..	Colo..	5	....	....	....	....	....	....	....	....	....	....	....	....	....
Ontario	Utah..	100	....	....	11.25	11.00	11.00	....	11.00	....	11.50	11.00	....	....	260
Portland	Colo..	1	....	....	....	....	....	....	....	....	....	....	....	....	....
Quicksilver	Cal....	100	4.50	33⅛	4.00	3.88	4.50	4.00	4.75	4.00	4.88	4.00	4.00	....	5,517
" pf....	Cal....	100	....	....	....	....	11.50	10.00	11.50	11.13	11.00	....	....	....	2,600
Savage	Nev ..	2½	....	....	....	....	....	....	....	....	.15	....	....	....	200
Small Hopes	Colo..	20	....	....	....	....	....	....	....	....	....	....	....	....	....
Standard Con	Cal....	10	3.75	....	....	....	4.00	....	....	....	....	....	....	....	200
Union Copper...	N. C..	10	4.88	4.63	4.75	4.50	4.50	4.25	4.63	4.50	4.63	4.50	....	....	....
Work	Colo..	1	.14½	....	....	....	....	....	....	....	....	....	....	....	2,000

COAL AND INDUSTRIAL STOCKS.

Am. Agr. Chem.	U.S ..	$100	24	....	25	21	22½	21	23	....	....	....	25¾	....	300
" " pf	"	100	83	81	81	....	83	81	....	....	81½	....	85	80	200
Am. Car & Fdy..	"	100	25⅝	25¼	25¾	25⅝	25⅝	25¼	26	25¼	25½	25¼	25¼	....	6,150
" " pf	"	100	81	....	....	....	81	80½	81	80¾	80½	....	....	....	3,670
Am. Sm. & Ref.	"	100	44	42⅝	44⅛	43¼	43⅞	42⅝	44⅛	43⅛	43¾	42⅝	43¾	....	23,715
" " pf	"	100	98	97¼	98	....	97½	97	97¾	97	97⅛	97	97⅜	....	2,880
Col. Fuel & I..	Colo..	100	93¼	91	93	92⅝	93	92¾	93¼	93	92½	91¾	92	....	6,900
Col. & H. C.& I.	"	100	....	....	....	....	....	....	....	....	....	....	17	....	100
Int'l S. Pump..	U. S..	100	46⅞	46½	47	....	47	....	47	46½	47	46⅝	....	....	2,200
" " pf.	"	100	....	....	88	....	86¾	....	88	....	89	....	....	....	450
*Mong. R. Coal.	Pa....	100	13⅝	13⅜	13¾	13⅞	13¾	13¼	13⅝	13¾	....	....	....	....	1,065
" " pf	"	100	47	....	47	....	47	....	47	....	....	....	....	....	....
National Lead..	U. S..	100	21	19¼	20⅜	....	....	....	....	....	19½	19	....	....	1,000
" pf	"	100	....	....	....	....	....	....	....	....	....	....	....	....	....
National Salt...	"	100	30¼	....	33	....	32½	....	31⅝	....	....	....	31¾	....	310
" " pf	"	100	62	....	63⅜	....	64	....	63¼	....	63⅞	....	....	....	400
*Pittsburg Coal.	Pa....	100	29⅛	28⅞	29½	29⅛	29	28¾	28	....	....	....	....	....	2,025
" " pf	"	100	95	94⅜	94¾	94½	94¼	94¼	93	92½	....	....	....	....	962
Pressed St. Car.	"	100	39¾	39¼	39½	39⅛	39¾	....	....	....	41	40	41¼	....	5,300
Republic I. & S.	U. S..	100	15⅝	14⅜	15⅝	15½	15⅛	15	15⅝	15	15⅜	15	15	....	6,250
" " pf	"	100	67	66¼	67	66	66¾	65⅞	67	66	....	....	67¾	....	2,600
Sloss-SheffS.&I.	Ala...	100	....	....	....	....	....	....	....	....	....	....	....	....	....
" " pf....	"	100	80	....	....	....	....	....	....	....	....	....	....	....	70
Standard Oil....	U. S..	100	734	730	740	735	735	730	732	727	725	720	725	720	....
Tenn. C. I.&R.R	Ala...	100	61¼	60¼	60⅞	60¼	61¼	59¾	62	60½	61	60	60	....	8,420
U. S. Steel Corp	U. S..	100	43¾	43¼	43¾	43	43¾	42⅝	44	43⅛	43⅝	42⅞	43⅜	....	110019
" " pf....	"	100	94	93⅝	94⅛	93⅞	94⅝	93¾	93¼	92⅝	92⅝	92¼	92⅝	....	58,310
Va.-Car. Chem..	"	100	60	57	60	58¾	59¼	....	59¼	....	59	58¾	59¼	58⅝	400
" " pf....	"	100	120¾	118	120½	119½	125	118½	125	121	124	120	123	120½	....

On Pittsburg, Pa.. Exchange. Total sales, 615,023 shares.

PHILADELPHIA, PA. §

Name of Company.	L'cation.	Par Val.	Oct. 10. H.	Oct. 10. L.	Oct. 11. H.	Oct. 11. L.	Oct. 12. H.	Oct. 12. L.	Oct. 14. H.	Oct. 14. L.	Oct. 15. H.	Oct. 15. L.	Oct. 16. H.	Oct. 16. L.	Sales
Am. Alkali	.....	$50	.75	....	....	....	....	....	....	....	....	....	....	....	12
Am. Cement	.....	10	6.50	....	....	....	....	....	....	....	....	....	....	....	100
Bethlehem Iron.	Pa.	50	61.50	....	....	....	....	....	61.50	....	†60.5	....	61.50	....	15
Bethlehem Steel	"	50	....	....	....	....	....	....	....	....	....	....	....	....	....
Cambria Iron..	"	50	....	....	....	....	....	....	....	....	....	....	47.00	....	8
Cambria Steel...	"	50	26.00	25.63	26.25	26.00	26.25	26.00	26.13	25.88	26.25	26.00	26.00	25.63	11,279
Susq. I. & S.....	"	10	1.88	....	....	....	1.88	....	1.88	....	1.88	....	1.88	....	3,020
United Gas I....	"	50	114⅛	114⅜	114⅛	....	114¾	....	....	....	114⅜	113⅞	....	....	751

Total shares sold, 15,185. § Reported by Townsend, Whelen & Co , 309 Walnut St., Philadelphia. †Ex-dividend.

CALIFORNIA OIL STOCKS.*

Name of Company.	Shares Issued	Par Val.	Sept. 27. H.	Sept. 27. L.	Sept. 28. H.	Sept. 28. L.	Sept. 30. H	Sept. 30. L.	Oct. 1. H.	Oct. 1. L.	Oct. 2. H.	Oct. 2. L.	Oct. 3. H.	Oct. 3. L.	Sales
Blue Goose...	5,000	$100	1.50	....	....	....	1.50	....	1.50	....	1.50	....	1.50	....	....
Buckhorn.....	16,000	10.00	....	....	3.75	....	....	....	3.75	....	....	....	....	....	....
Cal. Standard.	500,000	1.00	.22	.21	.24	.22	.24	.21	.22	.21	.25	.21	.24	.22	3,100
Caribou.....	30,000	1.00	.75	.72	.78	.72	.70	....	.75	.70	.70	....	.70	....	700
El Dorado.....	100,000	1.00	.80	.50	.75	....	.75	.50	.75	.70	.75	.50	.75	.50	100
Fou.....	800,000	1.00	.39	.38	.39	....	.39	.38	.41	.35	.39	.38	.40	.38	3,920
Hanford.....	2,000	10.00	105.	95.00	105.	99.00	110.	98.00	106.	100.	106.	101.	105.	102.	67
Home.....	100,000	1.00	3.45	3.40	3.35	3.30	3.45	3.35	3.50	3.40	3 50	3.35	3.45	3.35	2,575
Homestake....	10,000	10.00	9.00	6.00	....	....	....	....	....	....	9.00	....	9.00	8.50	....
Independence.	500,000	1.00	.11	.10	.09	....	.11	.09	.11	.09	.11	....	.11	.10	500
Junction.....	250,000	1.00	.24	.22	.23	.22	.24	.20	.24	.20	.23	.20	.23	.20	9,800
Kern.....	100,000	1.00	5.50	5.13	5.75	5.25	5.75	5.38	6.50	5.00	5.50	5.13	6.00	5.00	50
Kern River...	20,000	5.00	10.00	7.00	10.00	....	10.00	....	10.00	....	7.00	6.00	7.00	6 50	10
Lion.....	240,000	1.00	.09	.08	.08	.05	.08	.07	.08	.07	.08	.07	.09	.08	5 460
McKittrick....	500,000	1.00	.20	.18	....	....	.24	.20	.25	.17	.20	.15	.20	.15	327
Monarch.....	530,000	1.00	.22	.20	.22	.21	.21	.20	.21	.20	.21	.20	.22	.20	4,100
Monte Cristo..	407,600	1.00	1.75	1.68	1.70	1.65	1.75	1.65	1.70	1.65	2.00	1.60	1.70	....	1,233
Occidental....	600,000	3.00	.45	.35	.45	.35	.45	.35	.45	.37	.45	.36	.43	.38	674
Oil City Petrol	500,000	1.00	.26	.24	.26	.25	.26	.25	.26	.25	.25	.22	.26	.25	2,900
Peerless.....	373,000	10.	5.25	4.90	5.18	4.90	5.13	4 90	5.50	4.95	5.38	5.00	5.38	5.13	570
Petro. Center.	500,000	1.00	.02	.01	.02	.01	.01	....	.01	....	.01	....	.01	....	34,200
San Joaquin..	100,000	1.00	8.25	8 00	8.12	8.00	8.25	8.00	8.25	7.88	8.25	8.00	8.25	8.00	110
Sterling.....	200,000	1.00	1.83	1.80	1.85	1.80	1.85	1.80	1.85	1.50	1.85	1.80	1.40	1.35	500
Sunset.....	100,000	5.00	.10	....	.10	....	.10	....	....	....	....	....	.10	....	....
Twenty-eight..	60,000	1.25	2.00	1.65	1.65	....	1.75	1.65	1.75	1.60	1.80	1.60	1.70	1.65	650
Yukon.....	100,000	2.50	....	....	....	....	....	....	....	....	....	....	.35	....	....

*Producers' Oil and San Francisco Oil Exchanges. Total sales 70,536 shares

SPOKANE, WASH.

Week Oct. 11.

Name of Company.	Par val.	B.	A.	Sales.	Name of Company.	Par val.	B.	A.	Sales.
Black Tail.....	$1	.09¾	.10	.....	Princess Maud.....	0.10	.01⅝	.01¾	14 500
Crystal.....	1	.09⅝	.11	.....	Quilp.....	1	.20	.28	2,000
Deer Trail Con..	1	.02	.02¾	.....	Rambler Cariboo..	0.25	.49	.51	.....
Gold Ledge.....	1	.01	.01¾	.....	Reservation.....	1	.03¼	.03¾	1,000
Lone Pine-Surp. Con...	1	.03¾	.04¾	.....	Sullivan.....	1	.0-½	.10¾	.....
Morning Glory.....	0.10	.02¾	.03	.....	Tom Thumb.....	1	.12⅜	.13⅝	1,000
Mountain Lion.....	1	.23	.27	.....	.....	.....	.....	.....	.....

BOSTON, MASS.†

Name of Company.	Par val.	Shares listed.	Oct. 10. H.	Oct. 10. L.	Oct. 11. H.	Oct. 11. L.	Oct. 12. H.	Oct. 12. L.	Oct. 14. H.	Oct. 14. L.	Oct. 15. H.	Oct. 15. L.	Oct. 16. H.	Oct. 16. L.	Sales
Adventure Con.c	$25	100,000	24.75	24.25	25.75	24.75	25.25	24.50	25.00	24.50	25.38	24.75	25.00	22.75	4,650
Aetna Con. q....	5	100,000	....	....	....	....	....	....	....	....	....	....	....	....	....
Allouez, c.....	25	80,000	2.75	2.00	2.50	2.00	2.63	2 00	3.00	2.25	2.75	2 25	2.63	1.88	13,147
Amalgamated, c.	100	1550.000	89.63	86.88	90.38	88.63	90.25	88 75	89.63	87.50	90.00	87.25	88.00	85.75	47,856
Am. Gold Dreg..	5	90,000	....	....	....	....	....	....	....	....	....	....	....	....	....
Am. Z. L. & Sm.	25	60,000	10.00	....	....	....	9.88	....	9.50	....	....	....	....	....	310
Anaconda, c.....	25	1200,000	37.00	35.00	37.88	37.00	36.25	....	....	....	....	....	36.00	34.88	680
Arcadian, c.....	25	150,000	....	....	9.00	....	9.00	....	3.50	8.00	8.00	6.00	6.25	6.00	2,635
Arnold, c.....	25	60,000	....	....	....	....	....	....	....	....	....	....	....	....	....
Ash Bed.....	25	40,000	....	....	....	....	....	....	....	....	....	....	....	....	....
Atlantic, c.....	25	40,000	33.00	32.50	....	....	35.00	33.25	41.50	38 00	39 50	37.00	36.00	35.50	8,195
Baltic.....	25	100,000	45.50	43.00	46.00	45.50	47.00	46.50	46.50	46.00	46.00	44.00	43.00	42.00	1,760
Bingham, Cons..	50	150,000	31.25	30.00	32.00	31 00	31 25	....	....	....	32.00	30.00	....	....	1,516
Bonanza Dev....	10	800,000	1.08	1.00	....	....	....	....	1.15	....	....	....	1.06	....	775
Boston, q.....	10	100,000	....	....	....	....	....	....	....	....	....	....	....	....	....
Breece.....	25	200,000	....	....	....	....	1.00	....	....	....	....	....	....	....	500
British Columbia	5	200,000	....	....	13.50	11.25	....	....	13.50	....	13.00	....	14.75	14.25	550
Cal. & Hecla, c..	25	100,000	640	....	660	658	680	....	680	675	680	675	675	660	183
Catalpa.....	10	300,000	....	....	....	....	....	....	....	....	....	....	....	....	....
Centennial, c....	25	90,000	21.25	20.50	21.75	21.50	21.25	....	21.50	20.75	21.75	21.25	20.75	20.13	2,250
Central Oil.....	25	60,000	....	....	....	....	....	....	....	....	....	....	....	....	....
Cochiti, g.....	10	193,750	....	....	3.00	....	....	....	4.00	....	3.50	4.00	4.00	....	170
Cons. Mercur, g.	5	1000,000	2.25	....	2.25	....	....	....	....	....	....	....	....	....	500
Con. Z.&L.M.&S.	10	110,000	....	....	....	....	....	....	....	....	....	....	....	....	....
Copper Range, c.	25	100,000	61.25	58.00	63.00	61.00	63.00	61.50	62.00	61.00	62.00	59.00	59.00	57.50	4,495
Daly-West.....	20	150,000	....	....	....	....	....	....	57.00	....	57.00	56.50	56.00	55.00	450
Dominion Coal..	100	150,000	41.50	44.00	46.00	45.25	46.00	45.50	49.75	48.00	50.00	48.25	48.00	46.75	7,854
do, pref.....	100	30,000	....	....	117⅛	....	....	....	117¾	....	118	....	....	....	90
Dominion, I.&St.	100	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Elm River, c....	12	100,000	....	....	4.00	....	....	....	....	....	....	....	3.75	....	190
Franklin, c.....	25	100,000	18.00	17.00	17.75	17.50	17.75	17.25	18.00	....	....	....	17.50	17.00	795
Guanajuato Cons	5	385,000	8.75	7.75	9.00	8.00	9.00	8.13	8.88	7.25	8.13	7.75	7.75	7.25	13,787
Humboldt, c....	25	40,000	....	....	....	....	....	....	.10	....	....	....	....	....	....
I. Royale Con., c	25	150,000	27.50	26.50	27.25	26.50	27.00	26.50	27.50	27.00	28.00	26.25	25.75	22.50	6,691
Mass Con., c.....	25	100,000	27.00	25.00	28.63	27.50	28.75	27.50	28.25	26.50	28.75	27.00	25.75	25.00	20,648
Mayflower, c....	25	100,000	5.00	4.00	4.25	4.75	5.88	5.00	5.50	5.00	5.63	5.00	5.13	4.93	19,594
Merced, g.....	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Michigan, c.....	25	100,000	15.00	14.00	16.00	15.00	15.25	14.75	15.25	14.75	15.50	14.75	14.50	13.50	4,630
Mohawk, c.....	25	100,000	46.00	44.50	46.50	45.25	45.75	45.50	45.50	45.00	46.00	45.00	44.75	43.50	5,271
Mont. C. & C....	25	200,000	....	....	....	....	....	....	....	....	....	....	....	....	....
National.....	25	100,000	2.25	....	3.25	3.00	....	....	3.00	....	....	....	....	....	175
N.E. Gas & Coke	100	100,000	....	....	....	....	5.50	....	5.50	....	....	....	5.50	5.25	400
Old Colony, c....	25	100,000	5.00	4.88	5.00	4.50	5.13	5.00	5.25	5.00	5.75	4.50	5.25	4 88	3,678
Old Dominion, c	25	150,000	28.50	27.50	29.00	28.50	29.75	28.00	28.75	28.25	28.50	28.00	28.00	26.00	3,098
Osceola, c.....	25	93,000	102¾	97.00	104	102	104	103	103¾	103¾	103¾	101	101¾	97.50	5,570
Parrot, s c.....	10	229,350	41.50	40.00	‡150	40.00	40.50	40.25	40.50	40.25	40.38	39.88	39.00	38.00	1,373
Phoenix Con., c..	25	100,000	6.75	....	7.00	6.50	7.00	....	6.75	6.50	6.50	6.13	....	....	960
Quincy, c.....	25	100,000	165	....	165	....	165	....	....	....	165	....	162	160	224
Rhode Island, c..	25	100,000	4.88	4.63	4.88	....	....	....	....	....	4.75	....	4.25	....	585
Santa Fe, g. c....	10	250,000	....	....	....	....	5.75	....	5.25	5.00	5.00	4.75	4.50	....	785
San Ysabel, g....	5	130,000	....	....	....	....	....	....	....	....	....	....	....	....	....
Shawmut Oil ...	25	50,000	....	....	....	....	....	....	....	....	....	....	....	....	....
Tamarack, c.....	25	60,000	305	290	310	305	305	300	....	....	300	....	290	290	368
Tecumseh, c.....	25	80,000	1.25	....	2.00	....	....	....	2.25	....	....	....	....	....	110
Trimountain, c..	25	100,000	44.00	....	45.00	44.00	43.50	....	44 00	42.50	....	....	....	....	618
Trinity, c.....	25	100,000	27.25	26.75	27.75	26.75	27.50	26.50	27 25	27.00	26.75	....	28.00	25.00	4,486
United States, g.	25	250,000	17.25	16.25	17.50	17.00	17 63	17.50	17 25	17.00	16.75	....	15.50	16.00	4,355
U. S. Oil.....	25	100,000	....	....	13.75	12.50	14 25	13.75	13.00	....	13.50	12.00	12.88	12.00	2,323
Utah Con., g.....	5	900,000	24.25	23.75	25.00	24.00	24.75	24.50	24.75	24.50	24.50	23.75	24.00	23 00	2,430
Victoria, g.....	25	100,000	9.00	7.63	9.00	8.25	8.88	8.50	8.88	8.13	8.75	8.00	8.00	7.75	9,920
Washington, c....	25	60,000	....	....	....	....	....	....	....	....	....	....	....	....	....
Winona, c.....	25	100,000	3.00	....	3.00	....	....	....	3.00	....	....	....	2.75	2.50	420
Wolverine, c....	25	60,000	60.00	58.00	62.00	61.00	62.00	61.50	61.00	....	62.00	....	61.00	60.00	1,149
Wyandot, c.....	25	100,000	....	....	1.75	....	....	....	1.75	....	....	....	1.50	....	270

†Official quotations Boston Stock Exchange. Total sales, 211,571 shares. ‡ Ex-dividend.

SALT LAKE CITY, UTAH.

Oct. 5.

Stocks.	Shares.	Par val.	Bid.	Asked.	Stocks.	Shares.	Par val.	Bid.	Asked.
Ajax.....	300,000	$10	$1.15	$1.29¼	Lower Mammoth.	150,000	$1	$2.96	$2.88
Albion.....	.....	.....	.....	.70	Mammoth	400,000	25	1.50	2.00
Alice.....	400,000	25	.....	.....	May Day.....	400,000	⅝	1.10⅜	1.40⅝
Anchor.....	150 000	10	1.30	4.00	Northern Light ..	400,000	5	.02	.05
Ben Butler.....	500 000	10	.17¾	.18¾	Ontario.....	150,000	100	9.80	12.00
Boss Tweed.....	250,000	1	.45	.54	Sacramento.....	1,000,000	5	.15	.20¾
Bullion Beck & Ch..	100,000	10	.....	.....	Shower Con.....	400,000	5	.05	.20
Centennial Eureka .	200,000	25	.....	.....	Silver King.....	150,000	20	77.50	85.00
Dalton.....	500,000	1	.03	.03⅝	Silver Shield.....	.....	.....	.01	.04
Daly.....	150,000	20	2.40	3.05	Star Consolidated	500,000	1	.33	.33⅜
Daly-West.....	150,000	20	33.00	34.00	Sunbeam.....	250,000	1	.35	.38
Dexter.....	200,000	5	.40	1.00	Swansea.....	100,000	5	1.50	2.60
Eagle & Blue Bell..	250,000	1	1.00	1.30	South Swansea....	150,000	1	.36	.53
Galena.....	100,000	10	.23	.40	Tesora.....	400,000	1	.61⅛	.70
Grand Central.....	250,000	1	3.00	4.75	Tetro.....	300,000	1	.23⅞	.29
Homestake.....	400,000	1	.....	.....	Uncle Sam Con...	500,000	1	1.25	1.34⅜
Horn Silver.....	400,000	25	1.50	2.05	Utah.....	100,000	1	.50	.70
Joe Bowers.....	400,000	1	.06	.07	Valeo.....	200,000	1	.18	.23⅝
.....	.....	.....	.....	.....	Yankee Con	250,000	0.10	4.00	5.00

ST. LOUIS, MO.*

Oct. 8.

Name.	Shares.	Par	Bid.	Ask.	Name.	Shares.	Par	Bid.	Ask.
Am.-Nettie, Colo....	300,000	$10	$1.10	$1.15	Doe Run Lead, Mo....	10,000	$100	$128.00	$135.00
Catherine Lead, Mo...	50,000	10	2.50	3.50	Granite Bimetallic, Mt.	1000,000	10	2.50	2.90
Central Lead, Mo.....	10,000	100	130.00	140.00	Kan. & Tex. Coal, Mo..	25,000	100	45.00	49.00
Columbia Lead, Mo...	50,000	10	12.50	13.00	Renault Lead, Mo.....	30,000	10	9.50	11.00
Con. Coal, Ill	50 0.0	100	13.00	31.00	St. Joe Lead, Mo.....	300.000	10	15.00	16.00

* From our special correspondent.

TORONTO, ONT.

Name of Company.	Par val.	Oct. 8. H.	Oct. 8. L.	Oct. 9. H.	Oct. 9. L.	Oct. 10. H.	Oct. 10. L.	Oct. 11 H.	Oct. 11 L.	Oct. 12. H.	Oct. 12. L.	Oct. 14. H.	Oct. 14. L.	Sales
Ontario :														
Golden Star.	1	.06	....	....	....	....	....	....	....	.04¾	.03⅞	.06	.04¾	.....
Ham Reef..	1	....	....	....	....	....	....	....	....	....	....	....	....	.....
British Col.:														
Cariboo MK	1	.32	.26	.30	.23	....	....	....	....	.29	.24	.28	.23	.....
Center Star.	1	.47	.40	.48	.40	....	....	....	....	.47	.44	.47	.43	.....
Crow's N. C.	25	80.00	74.00	80.00	74.00	....	....	....	....	80.00	72.00	80.00	73.00	.....

STOCK QUOTATIONS.

COLORADO SPRINGS, COLO. †

Name of Company.	Par val.	Oct. 7. B.	Oct. 7. A.	Oct. 8. B.	Oct. 8. A.	Oct. 9. B.	Oct. 9. A.	Oct. 10. B.	Oct. 10. A.	Oct. 11. B.	Oct. 11. A.	Oct. 12. B.	Oct. 12. A.	Sales
Acacia	$1	.15¾	.13¾	.15¾	.16¼	.15⅞	.16¼	.15⅝	.16	.15¼	.15⅝	.15¾	.15⅝	17,500
Alamo	1	.13½	.14¼	.13½	.14¼	.13½	.14¼	.13½	.14¼	.13½	.14¼	.13½	.14¼	30,000
Am. Con.	1	.....	.04⅛	.03	.04⅝	.03⅝	.03¾	.03	.04½	.....	.04½	.03	.04½	21,000
Anaconda	1	.....	.23	.27	.28	.26	.27	.....	.27½	.....	.28	.27	.30	3,900
Anchor	1	.....	.02	.....	.02	.....	.02	.....	.02	.....	.02	.....	.02	.....
Antelope	1	.01½	.02	.....	.02	.....	.....	.01	.02	.01	.01¾	.01	.02	3,000
Aola	1	.03	.03¼	.03½	.03¾	.....	.....	.03¼	.03¾	.03½	.....	.04	.04½	8,000
Arg'ntum J	2	.09	.10	.08¼	.....	.08	.09¾	.07½	.10	.08½	.10	.09	.10	.....
Banner	1	.01¾	.01½	.01	.....	.01	.....	.01	.....	.01	.02	.....	.02	4,000
Battle Mt.C	1	.17	.17⅜	.17	.18	.17½	.18½	.17¾	.20	.17⅛	.18½	.17⅛	.18½	.....
Black Bell	1	.07½	.08½	.07½	.....	.07½	.....	.08½	.09	.08	.08½	.08	.08½	2,000
Blue Bell	1	.13	.13¾	.14	.14¾	.14	.14⅝	.14	.14½	.....	.14½	.....	.14⅝	7,500
Buckhorn	1	.03¾	.04	.03¾	.....	.....	.05⅜	.....	.....	.....	.....	.03⅜	.....	.....
But'fly Terr	1	.....	.35	.....	.35	.....	.35	.....	.35	.....	.35	.....	.35	100
Cadillac	1	.....	.01¾	.01½	.....	.....	.01⅜	.....	.01½	.....	.01½	.....	.01⅜	1,000
Central C'n	1	.08½	.09¾	.08¼	.....	.05⅝	.06¼	.08¼	.09	.09⅛	.09	.08⅝	.09	2,000
Champion	1	.05½	.....	.05½	.04⅜	.03⅝	.....	.03½	.04	.03⅝	.03⅞	.....	.....	1,000
Chicolo	1	.....	.02	.01½	.02	.01½	.02	.01¼	.02	.01¾	.02	.....	.02	1,000
C. K. & N	1	.01¾	.02	.01¾	.02	.01¾	.02	.01¾	.02	.01⅝	.02	.01⅝	.02	13,000
C. C.Col'bia	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
C. C. G. Ext	1	.....	.07⅛	.....	.08	.05	.08	.06¾	.07	.....	.08	.06¾	.07½	1,000
C. C. & Man	1	.07	.07⅜	.....	.....	.07¼	.07½	.07⅜	.08	.07¾	.07½	.07¼	.07⅝	9,000
Creede& CC	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
C. C. Con	1	.07½	.07¾	.07	.07½	.07¾	.07⅝	.....	.04½	.07⅜	.....	.07½	.07¾	15,000
Dante	1	.04	.05	.04¾	.05	.04¾	.05½	.04½	.04⅝	.04	.04½	.05	.04⅝	9,000
Dr. Ja'k P't	1	.53¾	.53⅝	.54	.54¾	.54	.54½	.54⅝	.54⅞	.54⅝	.55¼	.55½	.55	20,100
Eclipse	1	.11½	.11¾	.11⅝	.11⅞	.11⅝	.11⅞	.11⅝	.12	.11⅞	.12⅛	.11¾	.12	62,000
Elkton Con	1	1.69	1.71	1.69	1.71	1.68½	.....	1.65	1.68½	1.65	1.67	1.65	1.68	5,486
El Paso G	1	.64¼	.64¾	.64½	.65	.64¾	.64¾	.63¾	.64	.63½	.64	.63¾	.64¼	81,000
F. Rawlings	1	.15½	17	.15	.....	.15	.16¾	.07	.07½	.17	.18½	.17	.18½	8,000
Findley	1	.06¾	.07½	.07	.07¾	.07¼	.07⅝	.....	.....	.07⅜	.07¾	.07⅜	.....	5,000
Gold Dollar	1	.18¼	.18⅜	.18¼	.18⅜	.17⅞	.18	.18	.18¼	.17⅝	.18⅛	.17⅞	.18	71,050
Golde'Cycl.	1	.64½	.65½	.64½	.66	.64	.65½	.64¼	.65	.63½	.65	.63	.65¼	3,000
Golden Fl.	1	.37½	.40	.37	.40	.35	.40	.35	.39½	.35	.40	.35	.40	.....
Gold Sov'n	1	.03⅜	.04¼	.03⅞	.04¼	.....	.04¼	.03¾	.04	.03¾	.04	.03¾	.04	4,000
Hayden	1	.....	.01¼	.....	.01¼	.....	.01⅛	.01¼	.....	.....	.01⅛	.....	.01⅛	2,000
Ing. Con	⅛	.12	.14	.12	.15	.10	.13	.12	.....	.12	.13⅞	.12⅜	.13⅜	5,500
Ironclad	1	.05	.....	.....	.05½	.....	.05½	.....	.....	.....	.05¾	.....	.05⅝	1,000
Isabella	1	.40½	.40⅝	.40⅜	.40⅞	.40⅜	.40⅞	.41¼	.42	.42½	.43	.43	.43⅛	83,600
Jack Pot	1	.35	.40	.55	.37	.36½	.....	.38	.39	.36	.38	.36	.39	8,500
Josephine	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.01½	.....	.....
Key West	1	.....	.01¾	.01¼	.01½	.01¼	.02	.01¼	.01½	.....	.01½	.01¼	.01½	.....
Lexington	1	.06	.06¾	.05½	.06¼	.06¼	.06¼	.05¾	.06⅞	.06¼	.06⅝	.06¼	.07	12,000
Magnet R.	1	.02	.02¾	.01⅞	.02¼	.02	.02⅜	.02	.02⅝	.02	.02¼	.02	.02¼	10,000
Margaret	1	.01½	.....	.....	.01⅝	.....	.....	.....	.01½	.....	.....	.....	.....	.....
Margery	1	.....	.02	.....	.02	.....	.02	.....	.02	.....	.02	.....	.02	.....
Midway	1	.03¼	.05⅜	.03½	.03⅝	.03½	.03¾	.03⅞	.04	.04	.04⅛	.04⅛	.04⅜	12,000
M. J. T	1	.01½	.01⅞	.....	.01⅞	.....	.02	.01¼	.02	.01½	.01⅝	.....	.01⅞	1,000
Mobile	1	.....	.02½	.....	.02½	.....	.02⅜	.....	.02⅝	.....	.02⅝	.....	.02½	.....
Moll.Dwyer	1	.06⅜	.05⅝	.03⅞	.06¼	.06¼	.06⅜	.06¼	.06⅜	.06	.06¾	.05⅞	.06⅜	42,500
Mollie Gib.	1	.22	.32	.21	.26	.23	.30	.21	.....	.23	.21	.22	.23	21,050
Monarch	1	.03¾	.04	.03⅝	.04	.03½	.04	.03½	.04½	.03½	.04¼	.03½	.04⅛	.....
Montreal	1	.....	.....	.01	.04¼	.....	.03½	.....	.03½	.....	.03⅝	.03½	.....	.....
Moon-A'c'r	1	.27	.30	.27	.....	.27	.29½	.27½	.29	.27	.....	.28	.....	4,000
Morning S	1	.04½	.04¾	.04½	.04⅝	.05¾	.05⅞	.05	.05½	.04½	.05¼	.04⅞	.05	395,400
National	1	.02½	.03	.02¾	.02⅞	.02½	.03	.02¾	.03	.02½	.02⅝	.02¾	.02½	11,000
Nellie V	1	.04¾	.04¾	.03½	.04½	.03⅞	.04½	.03⅞	.04½	.....	.04½	.03¾	.04⅛	21 000
New Haven	1	.....	.04½	.04½	.04¾	.04⅜	.04½	.04½	.....	.04⅜	.....	.04¾	.04⅝	17,000
Olive B'nch	1	.03½	.03¾	.03½	.04¼	.03⅜	.03¾	.03	.03¾	.03⅜	.03¾	.03¾	.03½	.....
Oriole	1	.02	.02⅝	.02½	.02¾	.....	.02½	.....	.02⅝	.....	.02½	.02	.02½	.....
Orphan	1	.19	.20	.19½	.....	.19⅜	.....	.19½	.21	.19⅝	.21	.19¾	.....	7,000
Pelican	1	.01	.01¼	.....	.01¼	.01	.....	.01	.01¾	.01⅛	.01⅜	.01	.01⅜	19 000
Pharmacist	1	.06¾	.07⅜	.07½	.07¾	.07½	.07⅝	.07¼	.07⅝	.07	.....	.06¾	.06⅞	30,000
Pilgrim	1	.04	.04⅝	.04	.04⅜	.04¼	.04½	.04¼	.....	.04	.....	.....	.....	6,500
Pinnacle	1	.07½	.....	.07⅜	.08½	.07⅜	.....	.07¾	.....	.07⅜	.....	.07⅜	.....	8,000
Pointer	1	.05½	.05⅞	.05⅜	.05½	.05¼	.05⅜	.05⅜	.05⅝	.05½	.05⅞	.05½	.05⅝	42,000
Portland	1	3.01	.....	3.05	3.06	3.01	3.02	3.00	.....	3.00	.....	3.00	.....	1,900
Prince Alb	1	.03½	.04	.03⅝	.03⅞	.03⅝	.03¾	.03½	.03⅝	.03¾	.03⅝	.03½	.03¾	1,900
Princess	1	.....	.04	.03¼	.04	.03½	.04	.02½	.04	.....	.04	.....	.....	6,000
Progress	1	.04	.04½	.04½	.04½	.03¾	.04	.03⅝	.04¼	.....	.....	.03½	.04	30,000
Republic	1	.03	.....	.03¼	.03½	.03¼	.02¾	.03¾	.....	.03½	.....	.03¾	.03⅞	1,500
Rob't Burns	1	.02⅜	.03	.....	.03	.02½	.03	.02½	.02¾	.02⅝	.03	.02½	.02½	2,000
Rose Maud	1	.05½	.05⅞	.05⅜	.05⅞	.05½	.06⅞	.05⅝	.05⅞	.05½	.05⅝	.05⅝	.05⅞	.....
Rose Nicol	1	.05¾	.06	.05⅝	.06¼	.05½	.06	.05½	.06½	.05⅝	.....	.05	.06¼	9,000
Silver Gold	1	.....	.01¼	.....	.....	.....	.01	.....	.01	.01	.....	.01	.....	2,000
Uncle Sam	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Va. M	1	.....	.04	.....	.....	.03¾	.....	.03⅝	.04	.....	.04	.....	.....	1,000
Vindicator	1	1.10	1.19	1.06	1.10¼	1.09	1.12½	.....	.....	1.07	.....	1.10	1.13	6,000
Work	1	.12¼	.13	.12⅜	.12¾	.12¼	.12¾	.12	.12½	.12	.12¾	.12½	.12⅜	3,000

†Colorado Springs Mining Stock Exchange. Total sales, 1,195,886 shares.

COLORADO SPRINGS. BY TELEGRAPH.

Name of Comp'y.	Par Val	Oct. 10. B	Oct. 10. A	Oct. 11. B	Oct. 11. A	Oct. 12. B	Oct. 12. A	Oct. 14. B	Oct. 14. A	Oct. 15. B	Oct. 15. A	Oct. 16. B	Oct. 16. A
Acacia	1	.15¾	.16	.15¼	.15⅝	.15⅜	.15⅝	.15⅜	.15¾	.15½	.15¾	.15¼	.15⅝
Alamo	1	.13½	.14¼	.08¾	.10	.13½	.14¼	.13½	.14¾	.13½	.14¼	.13½	.14¼
Anaconda	1	.26	.27½	.27	.28	.27	.30	.24	.27½	.26	.27½	.25	.28
Argentum	2	.07½	.10	.18½	.14¼	.09	.10	.09	.10	.09	.10	.09	.10
Battle Mtn	1	.17¾	.20	.17¼	.18½	.17¼	.18½	.17½	.18½	.18	.18½	.18½	.13¼
Butterfly Terrible	1	.30	.35	.30	.35	.30	.35	.25	.35	.25	.34½	.25	.35
Cripple Creek Con	1	.07¼	.07½	.07½	.07¾	.07½	.07¾	.07¾	.07¾	.07½	.07¾	.07	.07¼
Doctor Jack Pot	1	.54¾	.55½	.54¾	.55¼	.55½	.56	.55⅛	.56	.55	.55¾	.55½	.56
El Paso	1	.63¾	.64	.63¾	.64	.63	.63¼	.66⅞	67	.63½	.63	.63¾	.69
Elkton Con	1	1.65	1.67	1.65	1.67	1.65	1.68	1.65	1.68	1.65	1.66½	1.66	1.67½
Fanny Rawlings	1	.17	.18½	.17	.18½	.17	.18½	.16	.17½	.16	.18	.16	.17½
Findlay	1	.07¾	.07¾	.07¾	.07¾	.07⅜	.07¾	.07	.08	.07½	.07¾	.07½	.08
Gold Dollar	1	.17½	.18½	.17¾	.18½	.17⅞	.18½	.18	.18¼	.17⅞	.18	.17½	.17⅜
Gold King	1	.63½	.65	.63½	.65	.63	.65¼	.60	.63	.60⅝	.62	.60½	.62
Golden Cycle	1	.35	.40	.35	.40	.35	.30	.36	.40	.55	.39½	.35	.40
Golden Fleece	1	.07½	.08	.07½	.08	.07½	.08	.07	.09	.07	.08	.07	.08
Hart	1	.12	.12⅞	.12	.12⅞	.12⅜	.12⅝	.12½	.13	.12½	.13½	.12⅛	.12⅞
Ingham Con	1	.42½	.43	.42½	.43	.43	.43½	.43½	.44	.47	.47½	.45½	.45¾
Isabella	1	.36	.36	.36	.38	.36	.39	.37	.40	.39¼	.40	.38	.41
Jack Pot	1	.07¾	.08½	.07¾	.08½	.08¼	.09½	.07½	.08¼	.07	.08½	.07	.09
Keystone	1	.60	.61	.60	.61	.60	.60⅜	.60	.65	.55	.65	.55	.62
Last Dollar	1	.06¼	.06⅝	.06¼	.06⅝	.06¼	.07	.06½	.07	.06⅝	.07	.06½	.06⅞
Mollie Gibson	1	.21	.23	.21	.23	.21	.22	.21	.23	.21	.22	.21	.21½
Moon Anchor	1	.27	.28	.27	.28	.28	.29	.24	.30	.28	.29	.23½	.26½
Nugget	1	.13	.14½	.13	.14½	.15	.17	.14	.16	.15	.16½	.15	.16½
Orphan	1	.19¾	.21	.19¾	.21	.19¼	.20½	.19⅜	.21	.19⅝	.21½	.19½	.21
Pharmacist	1	.06¾	.07	.06¾	.07	.06¾	.06⅝	.06½	.06⅞	.05⅝	.06⅞	.06⅞	.07
Pinnacle	1	.07⅜	.08¼	.07⅜	.08¼	.07⅜	.07⅝	.07½	.08¼	.07½	.08½	.07½	.08½
Portland	1	3.00	3.03	3.00	3.03	3.00	3.05	2.98	3.05	3.00	3.05	3.00	3.05
Vindicator Con	1	1.07	1.20	1.07	1.12	1.10	1.13	1.15	1.20	1.20½	1.25	1.20½	1.25
Work	1	.12	.12½	.12	.12½	.12½	.13⅝	.12½	.12⅝	.12⅜	.12½	.12	.12⅜

MONTREAL, CANADA. Oct. 15.

Name of Company.	Par val.	H.	L.	Sales.	Name of Company.	Par val.	H.	L.	Sales.
Big Three	$1	.01	.....	.....	Montreal-London	0.24	.02	.01	.....
California	1	.06¼	.02	.....	Noble Fire	1	.07½	.....	.....
Can. Gold Fields	0.10	.05½	.03	.....	Novelty	1	.01¼	.00½	.....
Deer Trail Con	1	08	.02	500	North Star	1	.50	.20	.....
Evening Star	1	.04¾	.02	.....	Payne	1	.22½	.18	1,500
Golden Star	1	.06	.02	.....	Rambler-Cariboo	1	.....	.....	.....
Gold Hills Dev	1	.03½	.01	.....	Republic Con	1	.03¾	02	.....
Knob Hill	1	.39	.35	.....	Slocan-Sovereign	1	.02	.01	.....
Monte Christo	1	.01½	.01	.....	Virtue	1	.23¼	.21	2,000
Montreal G. F	1	.02	.....	.....	War Eagle	1	.20	.10	.....

LONDON. Oct. 5.

Name of Company.	Country.	Authorized capital.	Par value.	Last dividend. Amt.	Last dividend. Date.	Quotations. Buyers	Quotations. Sellers.
			£ s. d.	s. d.		£ s. d.	£ s. d.
American:							
Alaska Goldfields, g	Alaska	£300,000	1 0 0	2 3	Jan., 1901	10 0	15 0
Alaska-Treadwell, g	"	1,000,000	5 0 0	1 6	July, 1901	4 7 6	4 12 6
Anaconda, c., s	Montana	6,000,000	5 0 0	8 2	" "	7 2 6	7 5 0
Copiapo, c	Chile	200,000	2 0 0	1 6	July, 1900	2 12 6	2 15 0
De Lamar, g., s	Idaho	400,000	1 0 0	1 0	May, 1901	8 9	5 0
El Oro, g	Mexico	1 000,000	1 0 0	1 3	July 1901	1 6 3	1 8 9
Enterprise, g	British Col	300,000	1 0 0	.....	.....	5 0	10 0
Frontino & Bolivia, g	Colombia	140,000	1 0 0	3 0	July, 1901	17 6	1 0 0
Hall Mg. & Sm., c., s	British Col	325,000	1 0 0	.....	.....	8 6	9 6
Le Roi, g	" "	1,000,000	5 0 0	5 0	Nov., 1899	7 17 6	8 2 6
Le Roi No. 2, g	" "	120,000	5 0 0	5 0	July, 1901	8 10 0	8 15 0
Lillie, g	Colorado	250,000	1 0 0	2½	Apr., 1900	1 3	3 5
Montana, g., s	Montana	660,000	1 0 0	6	Apr., 1899	4 3	4 9
Mountain Copper	California	1,250,000	5 0 0	5 0	Oct., 1901	4 5 0	4 10 0
Stratton's Independence	Colorado	1,100,000	1 0 0	1 0	July 1902	1 2 6	1 5 0
St. John del Rey, g	Brazil	600,000	1 0 0	1 0	June, 1901	1 0 0	1 1 3
Utah Con.,g.(Highl'nd Boy)	Utah	300,000	1 0 0	5 0	May, 1902	4 15 0	5 5 0
Velvet, g	British Col'mbia	150,000	1 0 0	.....	.....	15 0	17 6
Ymir, g	British Col'mbia	200,000	1 0 0	1 0	July, 1901	2 2 6	2 5 0
European:							
Linares, l	Spain	45,000	3 0 0	7 0	Mar., 1902	4 0 9	5 0 0
Mason & Barry, c., sul	Portugal	420,000	1 0 0	12 6	May, "	3 7 6	3 12 6
Rio Tinto, c	Spain	1,625,000	5 0 0	£1 15s	Nov., 1901	47 2 6	47 5 0
" " pref	"	1,625,000	5 0 0	2s 6d	" "	6 2 6	6 7 6
Tharsis, c	"	1,250,000	2 0 0	1 2 0	May, 1900	6 2 6	6 7 6
Australia and N. Zeal'd.							
Assoc. Gold Mines	W. Australia	500,000	1 0 0	1 6	Jan., 1900	2 10 0	2 12 6
Broken Hill Prop., s	N. S. Wales	384,000	8 0	1 0	May, 1901	1 18 9	1 19 0
Great Boulder Prop	W. Australia	175,000	2 0	6	Sept., 1901	3 8	3 13 3
Hannan's Brownhill, g	"	140,000	1 0 0	7 6	Oct., 1900	5 17 6	4 0 0
Ivanhoe Gold Corp	"	1,000,000	5 0 0	4 0	July, 1901	9 0 0	9 2 6
Kalgurlie g	"	120,000	1 0 0	rts.	Oct., 1899	3 7 6	3 10 0
Lake View Consols, g	"	250,000	1 0 0	5 0	Oct., 1901	8 13 9	8 16 3
Mt. Lyell M. & R., l., c	Tasmania	900,000	3 0 0	2 6	Oct., 1901	4 6 3	4 8 9
Mt. Morgan, g	Queensland	1,000,000	1 0 0	6	Sept., 1901	4 12 6	4 15 0
Waihi g	New Zealand	330,000	1 0 0	2 6	Sept., 1901	5 1 3	5 13 9
Indian:							
Champion Reef, g	Colar Fields	220,000	10 0	4 0	Sept., 1901	5 11 3	5 18 9
Mysore Gold	"	250,000	10 0	4 0	July, 1901	5 16 3	5 18 9
Nundyroog, g	"	242,000	10 0	1 3	July, 1901	1 18 9	2 1 3
Ooregum, g	"	280,000	10 0	.....	.....	2 10 0	2 12 6
" pref. g	"	240,000	10 0	.....	.....	3 1 3	3 3 9
African:							
British S. Africa, chartered	So. Africa	5,000,000	1 0 0	rts.	May, 1899	2 18 9	3 0
Cape Copper, c	"	600,000	1 0 0	5 0	July, 1901	5 0 0	5 5 0
" " pref	"	150,000	2 0 0	5 0	" "	4 15 0	5 0 0
City & Suburban (New), g	Transvaal	1,360,000	4 0 0	8 0	Aug., 1899	5 13 9	5 16 3
Con. Deep Level, g		200,000	1 0 0	.....	.....	1 0 0	1 5 0
Crown Reef, g	"	120,000	1 0 0	18 0	Nov., 1899	14 7 6	14 12 6
De Beers Con., d	Cape Colony	3,950,000	5 0 0	£1	Mar., 1901	16 16 3	16 18 9
Ferreira, g	Transvaal	90,000	1 0 0	30 0	Aug., 1899	19 15 0	20 5 0
Geldenhuis Deep, g	"	350,000	1 0 0	8 0	" "	10 10 0	10 15 0
Geldenhuis Est., g	"	200,000	1 0 0	10 0	" "	6 1 3	6 3 9
Henry Nourse, g	"	125,000	1 0 0	10 0	Aug., 1899	7 0 0	8 2 6
Jagersfontein, d	Orange Fr. St	1,000,000	5 0 0	6 0	Dec., 1900	18 17 6	19 2 6
Johannesburg Con. Invet.	So. Africa	2,750,000	1 0 0	2 0	Aug., 1899	2 1 3	2 3 9
Jubilee, g	Transvaal	50,000	1 0 0	5 0	Aug., 1899	9 10 0	9 15 0
Langlaagte Estate, g	"	470,000	1 0 0	3 0	Sept., 1899	3 7 6	3 10 0
May Con., g	"	290,000	1 0 0	6 0	Aug., 1899	4 2 6	4 5 0
Meyer & Charlton, g	"	100,000	1 0 0	8 0	July 1899	5 2 6	5 7 6
Namaqua, c	Cape Colony	200,000	2 0 0	8 0	June, 1900	4 2 6	4 7 6
Primrose (New), g	Transvaal	300,000	1 0 0	6 0	Aug., 1899	4 0 0	4 2 6
Rand Mines, g	So. Africa	490,000	1 0 0	15 0	" "	40 8 9	40 11 3
Robinson, g	Transvaal	2,750,000	5 0 0	8 0	.....	9 10 0	9 12 6
Sheba, g	"	1,100,000	1 0 0	6	July, 1898	18 9	1 0 0
Sim. & Jack Prop., g	"	5,000,000	5 0 0	4 0	July, 1899	6 0 0	6 2 6
Wolhuter, g	"	850,000	4 0 0	2 0	Feb., 1899	3 17 6	4 2 6

c.—Copper. d.—Diamonds. g—Gold. l.—Lead. s.—Silver.

PARIS. Sept. 26

Name of Company.	Country.	Product.	Capital Stock.	Par value.	Latest divs.	Prices. Opening.	Prices. Closing
			Francs.	Fr.	Fr.	Fr.	Fr.
Acieries de Creusot	France	Steel mfrs	27,000,000	2,000	85.00	1,760.00	1,758.00
" " Firminy	"	" "	3,000,000	500	30.00	2,650.00	2,550.00
" " Huta-Bank	Russia	Iron & steel	.....	500	.....	3,240.00	3,200.00
" " la Marine	France	Steel mfrs	20,000,000	500	65.00	1,450.00	1,424.00
" " Longwy	.....	Steel mfrs	.....	500	50.00	840.00	850.00
Anzin	France	Coal	.....	.....	.....	320.00	5,525.00
Biache St. Vast	.....	.....	.....	1,000	160.00	3 350.00	3,350.00
Boleo	Lower Cal	Copper	.....	500	176.00	2,205.00	2,205.00
Briansk	Russia	Coal & iron	.....	500	.....	530.00	500 00
Bruay	France	Coal	.....	400	12.50	485.00	484 00
Champ d'Or	S. Africa	Gold	3,375,000	25	3.75	30.00	27.75
Courrieres	France	Coal	600,000	300	90.00	3,375.00	2,350.00
Dombrowa	Russia	"	.....	500	75.00	945.00	900.00
Dourges	France	Coal	12,000,000	500	700.00	24,700.00	24,700.00
Dynamite Centrale	.....	Explosives	.....	500	19.00	540.00	539.50
Escombrera-Bleyberg	Spain	Lead	.....	500	50.00	775.00	726.00
Fraser River	Brit. Col'mb.	Gold	250,000	25	.....	5.50	5.25
Huanchaca	Bolivia	Silver	40,000,000	125	5.00	89.75	94.50
Laurium	Greece	Zinc & lead	16,300,000	500	28.00	325.00	329.00
Malfidano	Italy	Zinc	12,500,000	500	12.50	355.00	345.00
Metaux, Cie. Fran. de	France	Metal d'lers	25,000,000	500	22.50	472.00	448.00
Mokta-el-Hadid	Algeria	Iron	18,312,500	500	55.00	866.00	845.00
Napthe Baku	Russia	Petroleum	.....	.....	.....	385.00	374.00
Napthe Nobel	"	"	.....	.....	.....	470.00	470.00
" " parts	"	"	.....	.....	.....	9,350.00	9,350.00
Nickel	N. Caled'nia	Nickel	10,000,000	250	20.00	538.00	525.00
Penarroya	Spain	Coal etc	.....	500	55.00	1,075.00	1,075.00
Rebecca	Colo'do, U.S.	Gold	5,000,000	25	.....	1.25	1.25
Rive-de-Gier	France	.....	.....	.....	.....	22.00	19.50
Salines de l'Est	"	Salt	.....	500	6.00	240.50	245.00
Saint Etienne	"	.....	.....	.....	22.00	465.00	465.00
Salines du Midi	"	"	.....	500	40.00	504.00	540.00
Vicoigne Neux	"	"	.....	.....	10.00	22,250.00	22,200.00
Vielle Montagne	Belgium	Zinc	9 000,000	80	30.00	605.00	602.00

MEXICO. Oct. 12.

Name of Company.	Shares.	Last div'd.	Prices. Op'g.	Prices. Cl'g.	Name of Company.	Shares.	Last div'd	Prices. Op'g.	Prices. Cl'g.
Durango:					Hidalgo:				
Capuzaya Guan	2,400	.....	$10	$15	Soledad	960	$5.00	$290	$285
Restauradora Guan.	10,000	.....	10	10	Sorpresa	980	5.00	260	260
Guanajuato:					Union Hacienda	2,000	5.00	200	170
Angustias	2,400	$5.00	105	110	Mexico:				
Cinco Senores	2,000	15.00	890	850	Coronas	500	.....	45	45
Guadalupe Hacie'a.	10,000	3.00	205	210	Esperanza y An	3,000	10.00	809	800
Hidalgo:					Michoacan:				
Amistad y Concord.	9,600	3.65	44	45	Luz de Borda	4,000	.....	20	15
Arevalo	720	.....	200	90	S. Luis Potosi:				
Bartolome de Med	2,000	2.00	45	45	Concep. aviad	2,400	.....	135	150
Carmen	1,100	7.75	130	130	Zacatecas:				
Luz Ca Maravillas	1,100	.....	80	80	Asturiana	2,500	10.00	80	70
Rebellon	800	27.89	10	15	C'delar de Pinos	2,500	.....	430	440
Real del Monte	2,554	10.00	850	1,000	Palma de Somb	2,400	.....